

000d4009

DRAFT

# PHASE I DATA SUMMARY INDUSTRIAL AREA ENVIRONMENTAL EVALUATION

ROCKY FLATS PLANT  
INDUSTRIAL AREA  
OPERABLE UNIT NOS. 8, 9, 10, 12, 13, and 14

U.S. DEPARTMENT OF ENERGY  
Rocky Flats Plant  
Golden, Colorado

ENVIRONMENTAL MANAGEMENT PROGRAM

OCTOBER 1993

ADMIN RECORD

A-DU08-000178

# **NOTICE:**

## **UNNUMBERED PAGES**

The following document contains pages that were not numbered. The microform copy is representative of the paper copy. If replacement pages are distributed, they will be microfilmed and included in the Administrative Record file.

The Administrative Record Staff

## TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
EXECUTIVE SUMMARY .....	iii
1.0 INTRODUCTION .....	1-1
2.0 IDENTIFICATION OF HABITAT TYPES .....	2-1
3.0 VEGETATION SURVEY .....	3-1
4.0 SMALL MAMMAL SURVEY .....	4-1
4.1 EAST DRAINAGE STUDY AREA .....	4-2
4.2 NORTH POND AND SEEP STUDY AREA .....	4-2
4.3 NORTHWEST DRAINAGE STUDY AREA .....	4-2
4.4 WEST RAILROAD STUDY AREA .....	4-3
4.5 WEST AREA STUDY AREA .....	4-3
5.0 BIRD SURVEY .....	5-1
6.0 REFERENCES .....	6-1

**TABLE OF CONTENTS**  
**(Continued)**

**LIST OF TABLES**

<b><u>Table No.</u></b>	<b><u>Title</u></b>
3.1	Vegetation Species by Habitat
4.1	Results of Small Mammal Live Trapping at the East Drainage Study Area, October 14 Through 16, 1993
4.2	Results of Small Mammal Live Trapping at the North Pond and Seep Study Area, October 14 Through 16, 1993
4.3	Results of Small Mammal Live Trapping at the Northwest Drainage Study Area, October 14 Through 16, 1993
4.4	Results of Small Mammal Live Trapping at the West Railroad Study Area, October 14 Through 16, 1993
4.5	Results of Small Mammal Live Trapping at the West Area Study Area, October 14 Through 16, 1993

**LIST OF FIGURES**

<b><u>Figure No.</u></b>	<b><u>Title</u></b>
1	Industrial Area Environmental Evaluation Individual Hazardous Substance Sites
2	Industrial Area Environmental Evaluation East Drainage
3	Industrial Area Environmental Evaluation North Pond and Seep
4	Industrial Area Environmental Evaluation Northwest Drainage
5	Industrial Area Environmental Evaluation West Railroad
6	Industrial Area Environmental Evaluation West Area

**APPENDICES**

APPENDIX A - HABITAT AND VEGETATION SURVEY

APPENDIX B - SMALL MAMMAL SURVEY

## EXECUTIVE SUMMARY

Phase I field investigations for the Industrial Area Environmental Evaluation (IAEE) were completed in October, 1993 at the Rocky Flats Plant. Activities completed include the identification of habitats, a vegetation survey, and a small mammal survey. A planned song bird survey was delayed by access requirements and will be complete by early November. Surveys were conducted in each of the five study areas delineated in the IAEE Field Sampling Plan.

Habitats were identified and mapped by foot traverse. Species lists were also recorded. Eight habitat types identified within the Industrial Area (IA) include disturbed (annual/forb), mesic grass (mixed grassland), xeric grass (short grass), short marsh, tall marsh, deciduous woodland (woodland), reclaimed grassland, and ornamental plantings. Vegetation was surveyed with the Relevé methodology. Vegetation species were identified within the habitats and were recorded. No sensitive species or unique vegetation were observed.

A small mammal survey was conducted using live trapping for three nights in each of the study areas. A total of 130 live traps were set, producing a total of 37 captures of three species from 390 trap nights. The trapping results are summarized below:

SPECIES	NUMBER TRAPPED
White-footed deer mouse	16
Western harvest mouse	8
Prairie Vole	13
TOTAL	- 37

Bird surveys are expected to produce minimal sightings, with nesting activities completed and fall migration underway. Year-round residents such as the Starling will likely be observed.

## **1.0 INTRODUCTION**

This Phase I Data Summary addresses the Phase I field activities conducted during October, 1993 to satisfy the Work Plan requirements for the Industrial Area Environmental Evaluation (IAEE). Field activities were performed as outlined in the IAEE Field Sampling Plan (IAEE FSP) (DOE, 1993). The objectives, approach, and detailed methodologies used to conduct the field investigations are referenced in the IAEE FSP and EG&G Rocky Flats Plant (EG&G) Environmental Management Operating Procedures Manual. The purpose of this report is to briefly summarize field activities and results of the ecological investigation.

The report is divided into the four following sections:

- Identification of Habitat Types;
- Vegetation Survey;
- Small Mammal Survey; and
- Song Bird Survey.

All surveys and investigations followed the Ecology Standard Operating Procedures prepared by EG&G (EG&G, 1992a and 1992b).

## **2.0 IDENTIFICATION OF HABITAT TYPES**

Rocky Flats Plant (RFP) is composed of a wide variety of habitat types. The Industrial Area (IA) of the RFP, although the most disturbed and limited in terms of areal extent, also has diverse habitats. The distribution and abundance of plants and animals is influenced by many different features, including topography, aspect, soil type, previous and continuous disturbance, and microclimatic differences across the site. An understanding of present vegetative communities and wildlife habitat characteristics and usage provides important information to remediation efforts and restoration planning.

The extent of the habitats in the IA is limited to relatively undisturbed or reclaimed sites that total about 25 acres or, 6 percent of the Industrial Area. These habitats are fragmented and small with roads and disturbed surfaces interspersed throughout. Other habitats in associated Operable units (OUs) 1, 2, 4, 6, and 7 that are adjacent to and in the Industrial Area, and not included in these field surveys, occupy about another 30 acres. Figure 1 illustrates the Industrial Hazardous Substance Sites associated with the IA.

The IA was traversed on foot by two ecologists to characterize and map the different habitat types. The characterization of the IA habitats was conducted following EG&G SOP EE.11 (EG&G, 1992a). Topographic features, such as aspect and slope, were noted. Plant species lists were made to better understand ecological relationships of the area. Dominant species were recorded along with their spatial foliar dominance to a particular habitat type. The results of the characterization indicate that the IA area is composed of a mosaic of different habitat types. Discrete habitat differentiation was not possible in some areas, since a complex of several habitat types was present. This mosaic of habitat types was caused principally by intermittent surficial soil disturbance.

Habitat types identified in the IA area include disturbed (annual/forb), mesic grass (mixed grassland), xeric grass (short grass), short marsh, tall marsh, deciduous woodland (woodland),

reclaimed grassland, and ornamental plantings. Specific habitats were mapped in five different study areas illustrated in Figures 2 through 6.

The disturbed (annual/forb) habitat type was found throughout the IA. All study areas had this habitat type, including the East Drainage, North Pond and Seep, the Northwest Drainage, the West Railroad, and the West Area. These areas have had previous or frequent surficial soil disturbance due to road building and maintenance, mowing, earthmoving, and storage of cargo facilities.

The mesic grassland (mixed grassland) habitat type occurs in the Northwest Drainage and the West Area. These areas of about two to four acres are remnants of the original prairie. Several pristine prairie habitat types come together to compose the mesic grassland and they include tall grass prairie, northern mid-grass prairie, and southern mid-grass prairie. This habitat type was the most diverse with upwards of eighty species identified.

There were several small areas of xeric grassland (short grass) habitat located at the Northwest Drainage and at the West area. Although small, the xeric grassland habitat type was also very diverse with approximately 60 species identified. The xeric grassland habitat type was found on more gravelly outcrops with bare ground and rock, and exposed to harsh wind and weather conditions.

Due to a number of seeps, ditches, and diverted water sources, the short marsh habitat type occurs extensively throughout the IA. Short marsh was found at the East Drainage, North Pond and Seep, West Railroad, and West Area.

The water levels vary seasonally along the ditches and sloughs where the tall marsh habitat occurs. Cattails dominate areas with receding and stagnant water levels up to two feet deep. Therefore, in many areas of the IA, tall marsh has infiltrated canals and roadside ditches and maintained its dominance in shallow creeks which run through the Protected Area.

Deciduous woodland (soodland habitat) areas were encountered at the East Drainage, Northwest Drainage, and in the West Area. Since creeks and streams are small and flow intermittently at Rocky Flats, large areas of riparian woodland development have been minor. Creeks and streams are sparsely populated with single individuals or small pockets of mature trees.

Reclaimed grassland was found at all study sites, except the West Area. Disturbed areas are reclaimed with aggressive species in order to revegetate a site as quickly and as thoroughly as possible. Generally, native species take a long time to establish, so introduced species are used instead. Some native species have been hybridized to have more aggressive characteristics, such as faster establishment. Since the IA has largely been disturbed much of the area is composed of reclaimed grassland.

Ornamental plantings were observed throughout the IA. These ornamental plantings are not well maintained, but the understories are groomed and mowed at least once annually. These areas seemed to be major grouping sites for wildlife, such as deer and cottontail rabbits. Evidence of herbivory was noticed on the trees and grasses in and around ornamental plantings.

### 3.0 VEGETATION SURVEY

Vegetation was surveyed on October 13, 14, and 15, 1993 using Relevé methodology. Parameters collected included species richness, estimated plant foliar cover, and species dominance. Locations for the data collection were among numerous habitat types in the East Drainage, North Pond and Seep, Northwest Drainage, West Railroad, and West Area study areas. The surveys were conducted using the Relevé Survey Data Form (Form EE 5.10). Table 3.1 summarizes the vegetation species found within the habitats.

Dominant disturbed (annual/forb) species within the weedy/disturbed habitat include common sunflower (*Helianthus annuus*), Russian-thistle (*Salsola iberica*), klamath weed (*Hypericum perforatum*), curlycup gumweed (*Grindelia squarrosa*), Western ragweed (*Ambrosia psilostachya*), burning-bush (*Kochia iranica*), diffuse knapweed (*Centaurea diffusa*), cheat-grass (*Bromus tectorum*), Japanese brome (*Bromus japonicus*), Canada thistle (*Cirsium arvense*), musk thistle (*Carduus nutans*), and bull thistle (*Cirsium vulgare*).

Dominant graminoid species within the mesic grasslands (mixed grassland) habitat include needle-and-thread (*Stipa comata*), prairie junegrass (*Koeleria macrantha*), big bluestem (*Andropogon gerardii*), little bluestem (*Schizachyrium scoparium*), Canada bluegrass (*Poa compressa*), Kentucky bluegrass (*Poa pratensis*), sideoats grama (*Bouteloua curtipendula*), blue grama (*Bouteloua gracilis*), and mountain muhly (*Muhlenbergia montana*). A small pocket southeast of the Northwest Drainage is dominated by sleepygrass (*Stipa robusta*) and green needlegrass (*Stipa viridula*). Dominant forb species include blazing star (*Liatris punctata*), trailing fleabane (*Erigeron flagellaris*), smooth goldenrod (*Solidago missouriensis*), spreading fleabane (*Erigeron divergens*), and western yarrow (*Achillea lanulosa*). Other associated plants include false gromwell (*Onosmodium molle*), slimflower scurfpea (*Psoralea tenuiflora*), narrow-leaved umbrellawort (*Oxybaphus linearis*), wavy-leaf thistle (*Cirsium undulatum*), aster (*Aster ericoides*), western wheatgrass (*Agropyron smithii*), and prairie coneflower (*Ratibida columnaris*). Half-shrubs include wild rose (*Rosa acicularis*) and snowberry (*Symphoricarpos occidentalis*).

**TABLE 3.1**  
**Vegetation Species by Habitat**

<u>HABITAT</u>	<u>VEGETATION SPECIES</u>
Distrubed (annual/forb)	Sunflower, Russian-Thistle, Klamath Weed, Curlycup Gumweed, Western Ragweed, Burning Bush, Diffuse Knapweed, Cheat-grass, Japanese Brome, Canada Thistle, Musk Thistle, Bul Thistle
Mesic Grassland (mixed grassland)	Needle-and-Threadgrass, Prairie Junegrass, Big Bluestem, Canada Bluegrass, Kentucky Bluegrass, Sideoats Grama, Blue Grama, Mountain Muhly
Xeric Grassland (short grass)	Red Three-Awn, Fendler Three-Awn, Buffalo Grass, Hairy Grama, Ring Muhly, Aster, Mountain Bladder-Pod, Prairie Sage, Golden Aster, Filaree, Green Milkweed, Goldenrod, Winged Eriogonum, Sego-Lily, Sagewort, Broom Snakeweed, Spanish Bayonet, Prickly Pear
Short Marsh	Spike Rush, Rush, Baltic Rush, Soft Rush, Redtop Bentgrass, Timothy, Meadow Fescue, Nebraska Sedge, Foxtail Barley, Water Cress, Cress, Horsetweed, Common Evening-Primrose, Violet, Lady's Thumb
Tall Marsh	Common Evening Primrose, Catnip, Field Mint, Foxtail, Houndstongue, Plains Cottonwood, Russian-Olive, Peach-Leaved Willow
Deciduous Woodland (Woodland)	Plains Cottonwood, Russian-Olive, Peach-Leaved Willow, Creek Willow, Choke Cherry, Coyote Willow, Leadplant, Sandbar Willow
Reclaimed Grassland	Smooth Brome, Crested Wheatgrass, Intermediate Wheatgrass, Hybrid Native Side-Oats Grama, Alfalfa, White Sweet Clover, Yellow Sweet Clover, Wild Licorice
Ornamental Plantings	Ponderosa Pine, Russian-Olive, Plains Cottonwood, Juniper, Sheep Fescue

Dominant xeric grasses in the xeric (short grass) habitat included red three-awn (*Aristida longiseta*), Fendler three-awn (*Aristida fendleriana*), buffalo-grass (*Buchloe dactyloides*), hairy grama (*Bouteloua hirsuta*), ring muhly (*Muhlenbergia torreyi*). Dominant xeric forbs included aster (*Aster porteri*), mountain bladder-pod (*Lesquerella montana*), prairie sage (*Artemisia ludoviciana*), golden aster (*Heterotheca fulcrata*), and filaree (*Erodium cicutarium*). Associated plants included green milkweed (*Asclepias viridiflora*), goldenrod (*Solidago mollis*), winged eriogonum (*Eriogonum alatum*), and sego-lily (*Calochortus gunnisonii*). Half-shrubs associated with the xeric habitat type include common sagewort (*Artemisia campestris*) and broom snakeweed (*Gutierrezia sarothrae*). Succulents included Spanish bayonet (*Yucca glauca*) and cacti species included prickly pear cactus (*Opuntia compressa*).

The short marsh habitats dominated by sedges (*Carex* sp.) and rushes (*Juncus* sp.) with some tall marsh and deciduous woodland overstory species. Dominant short marsh grass-like species include spike rush (*Eleocharis acicularis*), rush (*Juncus torreyi*), baltic rush (*Juncus balticus*), soft rush (*Juncus effusus*), redtop bentgrass (*Agrostis stolonifera*), rush (*Juncus articulatus*), timothy (*Phleum pratense*), meadow fescue (*Festuca pratensis*), Nebraska sedge (*Carex nebraskensis*), and foxtail barley (*Hordeum jubatum*). Dominant forbs for this type included water-cress (*Nasturtium officinale*), cress (*Rorippa palustris*), horseweed (*Conyza canadensis*), common evening-primrose (*Oenothera stigosa*), violet (*Viola nuttallii*), and Lady's thumb (*Persicaria maculata*).

The tall marsh habitat type in the drainages was dominated by broad-leaved cattails (*Typha latifolia*) with an understory of short marsh species and an overstory of sparse deciduous riparian tree species. Common evening-primrose, catnip (*Nepeta cataria*), and field mint (*Mentha arvensis*) are commonly associated with the tall marsh. Some areas have small sandbars on which foxtail (*Alopecurus pratensis*) dominates. Houndstongue (*Cynoglossum officinale*) was also found among the tall marsh. Overstory trees include plains cottonwood (*Populus deltoides*), Russian-olive (*Elaeagnus angustifolia*), and peach-leaved willow (*Salix amygdaloides*).

Large trees present within the woodland habitat include plains cottonwood, Russian-olive, peach-leaved willow, and crack willow (*Salix fragilis*). Smaller tree species include choke cherry (*Prunus virginiana*), coyote willow (*Salix exigua*), leadplant (*Amorpha fruticosa*), and sandbar willow (*Salix interior*). The East Drainage showed evidence of the development of a potential deciduous woodland because of the many plains cottonwood seedlings along the ditch area. On the east side of the hillside deciduous woodland area, there were several dead snags and downed trees which may indicate a change in water availability and flow for the area, and a topographical shift of vegetation.

Dominant reclamation grasses within the reclaimed grassland areas include smooth brome (*Bromopsis inermis*), crested wheatgrass (*Agropyron cristatum*), intermediate wheatgrass (*Agropyron intermedium*), and a hybrid native side-oats grama. Crested wheatgrass, intermediate wheatgrass, and side-oats grama are bunchgrasses that aid in water and wind erosion control on steep hillsides and slopes. Forbs used in reclamation included alfalfa (*Medicago sativa*), white sweet clover (*Melilotus alba*), and yellow sweet clover (*Melilotus officinalis*). Due to the original disturbance of these sites and the large amount of exposed soil, many weedy species were also present. At the Northwest Drainage and the East Drainage areas, wild licorice (*Glycyrrhiza lepidota*) grows throughout the reclaimed grassland.

Some of the ornamental plantings were native and others were introduced species. The West Area had four rows of trees, including ponderosa pine (*Pinus ponderosa*), Russian-olive, plains cottonwood, and juniper (*Juniperus* sp.) that appeared to serve as a wind break. The understory is composed of a mosaic of mesic and xeric grassland species with sheep fescue (*Festuca ovina*) also dominating the site.

#### 4.0 SMALL MAMMAL SURVEY

A small mammal survey was conducted at five IA locations between October 14 and 16, 1993 using procedures from SOP EE.6. Live trapping surveys were conducted for three nights by placing a Sherman collapsible live trap at five meter spacings along trap lines as shown in Figures 2 through 6. Five study areas were selected for an ecological evaluation to determine the extent of potential contaminant transport through foodweb pathways. These five trapping locations corresponded to areas within the IA that represented patches of wildlife habitat that appeared to sustain viable populations of small mammals. In addition, these areas also were selected for vegetation characterization and habitat evaluation.

The traps were baited with commercial grain feed in the late afternoon and were checked the next morning between 0800 and 1000 hours. A total of 130 live traps were set in the following numbers in each study area:

·	East Drainage:	40 traps;
·	North Pond and Seep:	10 traps;
·	Northwest Drainage:	40 traps;
·	West Railroad:	20 traps; and
·	West Area:	<u>20 traps.</u>
	TOTAL	130 traps

The live traps were placed in vegetation close to drainage flow through these areas. It was reasoned that if contaminants were present in drainage flow, small mammals inhabiting the area would be exposed to contamination through direct contact or through ingestion of vegetation food items. The one exception occurred in the West Area where live traps were not placed in a drainage. A total of 390 trap nights produced 37 captures of three species as discussed below for each study area.

#### **4.1 EAST DRAINAGE STUDY AREA (Figure 2)**

Seventeen small mammals representing three species were caught over three trap nights at this location and are summarized in Table 4.1. The species were:

- White-footed deer mouse: 8 males;
- Western harvest mouse: 2 males and 2 females; and
- Prairie vole: 4 males and 1 female.

All the deer mice were juveniles (less than 12 grams total body weight) and were dispersing from their nests. Two subadult and two juvenile western harvest mice also were caught. Four of the five prairie voles were adults and one was a juvenile. Subadults and juveniles in the trapped population indicate successful reproduction in this study area. The one subadult female harvest mouse was reproductive. One adult vole and two juvenile deer mice were each recaptured once.

#### **4.2 NORTH POND AND SEEP STUDY AREA (Figure 3)**

Six small mammals representing three species were caught over three trap nights at this location and are summarized in Table 4.2. The species were:

- White-footed deer mouse: 1 male;
- Western harvest mouse: 1 male; and
- Prairie vole: 4 females.

The deer mouse was a subadult and non-reproductive. The harvest mouse was a non-reproductive adult. Three adult and one subadult prairie voles were captured. There were no recaptures at this site. This area supports a small population of voles and provides more suitable habitat for this species than for the deer mouse or western harvest mouse because of the small habitat size.

#### **4.3 NORTHWEST DRAINAGE STUDY AREA (Figure 4)**

Eleven small mammals representing three species were caught over three trap nights at this location and are summarized in Table 4.3. The species were:

- White-footed deer mouse: 1 males and 3 females ;
- Western harvest mouse: 1 male and 1 female; and
- Prairie vole: 1 male and 3 females.

Two adult and two juvenile deer mice were caught, along with 2 juvenile harvest mice. On the second trap night between traps 8 and 9, five juvenile mice were seen as the traps were being set. They could have been either deer mice or harvest mice. The high number of juveniles observed indicate young dispersal during this period, and successful reproduction. Two adult and two subadult prairie voles were also captured in this drainage. One deer mouse and one prairie vole were recaptured.

#### **4.4 WEST RAILROAD STUDY AREA (Figure 5)**

Only one juvenile female western harvest mouse was captured at this location as is indicated in Table 4.4. The trapping area was in a well vegetated drainage way with a wildlife trail through the bottom of it. The trail was probably in use by feral cats and cottontail rabbits, however, none were observed during the three days of trapping. This area is a narrow linear strip of disturbed/weedy and short marsh habitat which is probably marginal for the support of viable small mammal populations because of its small size.

#### **4.5 WEST AREA STUDY AREA (Figures 6A and 6B)**

Only two deer mice were captured at this study site over the three day trapping period, as is summarized in Table 4.5. Both were subadults, male and female. Neither of the individuals were reproductive. This area is a mixture of mesic and xeric prairie species with strong sign of cottontail and mule deer usage.

Each morning each trap was checked to see if the bait had been removed without tripping the trap. About six traps were sprung by wind during the three trapping events, and three traps were robbed of bait. The East and Northwest Drainage sites showed good small rodent activity. The West Railroad site had no indication of small rodent activity, and the West Site indicated stronger cottontail activity.

Feral cats were observed at the East and Northwest Drainage sites. The animal trail through the West Railroad site is probably used by feral cats and cottontail rabbits. No cats were seen at the North Pond and Seep site or at the West Site. It is postulated that cats are very effective in

keeping the rodent population at low levels. Another observation from experience at other sites is that deer mice avoid tall, dense grassy areas. Mowed grasses or sparse short grasses are more conducive to deer mouse populations. Deer mice were captured at the edges of tall grass and voles were captured in more dense grass habitat.

TABLE 4.1

Results of Small Mammal Live Trapping at  
the East Drainage Study Area, October 14 through 16, 1993

Small Mammal Species

White-footed deer mouse (*Peromyscus maniculatus*)

Number Caught:	Oct 14	Oct 15	Oct 16
Males	3	2	3
Females	0	0	0
Number of Age Classes:			
Juveniles	8	8	8
Number of Reproductives:	0	0	0
Number of Recaptures:	-	1	1

Western harvest mouse (*Reithrodontomys megalotis*)

Number Caught:	Oct 14	Oct 15	Oct 16
Males	0	2	0
Females	0	1	1
Number of Age Classes:			
Subadults	2	2	2
Juveniles	2	2	2
Number of Reproductives:	0	0	1
Number of Recaptures:	-	0	0

Prairie vole (*Microtus ochrogaster*)

Number Caught:	Oct 14	Oct 15	Oct 16
Males	1	3	0
Females	0	0	1
Number of Age Classes:			
Adults	4	4	4
Juveniles	1	1	1
Number of Reproductives:	0	0	0
Number of Recaptures:	-	1	0

TABLE 4.2

Results of Small Mammal Live Trapping at the  
North Pond and Seep Study Area, October 14 through 16, 1993

Small Mammal Species

White-footed deer mouse (*Peromyscus maniculatus*)

Number Caught:	Oct 14	Oct 15	Oct 16
Males	0	0	1
Females	0	0	0
Number of Age Classes:			
Subadults	1	1	1
Number of Reproductives:	0	0	1
Number of Recaptures:	-	0	0

Western harvest mouse (*Reithrodontomys megalotis*)

Number Caught:	Oct 14	Oct 15	Oct 16
Males	1	0	0
Females	0	0	0
Number of Age Classes:			
Adults	1	1	1
Number of Reproductives:	0	0	0
Number of Recaptures:	-	0	0

Prairie vole (*Microtus ochrogaster*)

Number Caught:	Oct 14	Oct 15	Oct 16
Males	0	0	0
Females	0	2	2
Number of Age Classes:			
Adults	3	3	3
Subadults	1	1	1
Number of Reproductives:	-	0	0
Number of Recaptures:	-	0	0

TABLE 4.3

Results of Small Mammal Live Trapping at  
the Northwest Drainage Study Area, October 14 Through 16, 1993

Small Mammal Species

White-footed deer mouse (*Peromyscus maniculatus*)

Number Caught:	Oct 14	Oct 15	Oct 16
Males	1	1	0
Females	2	1	0
Number of Age Classes:			
Adults	2	2	2
Juveniles	2	2	2
Number of Reproductives:	0	0	0
Number of Recaptures:	-	1	0

Western harvest mouse (*Reithrodontomys megalotis*)

Number Caught:	Oct 14	Oct 15	Oct 16
Males	0	1	0
Females	0	0	1
Number of Age Classes:			
Juveniles	2	2	2
Number of Reproductives:	0	0	0
Number of Recaptures:	-	0	0

Prairie vole (*Microtus ochrogaster*)

Number Caught:	Oct 14	Oct 15	Oct 16
Males	0	0	1
Females	0	2	1
Number of Age Classes:			
Adults	2	2	2
Subadults:	2	2	2
Number of Reproductives:	0	1	0
Number of Recaptures:	-	0	0

TABLE 4.4

Results of Small Mammal Live Trapping at the  
West Railroad Study Area, October 14 Through 16, 1993

Small Mammal Species

White-footed deer mouse (*Peromyscus maniculatus*)

Number Caught:	Oct 14	Oct 15	Oct 16
Males	0	0	0
Females	0	0	0
Number of Age Classes:	None		
Number of Reproductives:	None		
Number of Recaptures:	None		

Western harvest mouse (*Reithrodontomys megalotis*)

Number Caught:	Oct 14	Oct 15	Oct 16
Males	0	0	0
Females	0	0	1
Number of Age Classes:			
Juveniles	0	1	0
Number of Reproductives:	0	0	0
Number of Recaptures:	-	0	0

Prairie vole (*Microtus ochrogaster*)

Number Caught:	Oct 14	Oct 15	Oct 16
Males	0	0	0
Females	0	0	0
Number of Age Classes:	None		
Number of Reproductives:	None		
Number of Recaptures:	None		

TABLE 4.5

Results of Small Mammal Live Trapping at the  
West Area Study Area, October 14 Through 16, 1993

Small Mammal Species

White-footed deer mouse (*Peromyscus maniculatus*)

Number Caught:	Oct 14	Oct 15	Oct 16
Males	0	1	0
Females	0	1	0
Number of Age Classes:			
Subadults	0	2	0
Number of Reproductives:	0	0	0
Number of Recaptures:	-	0	0

Western harvest mouse (*Reithrodontomys megalotis*)

Number Caught:	Oct 14	Oct 15	Oct 16
Males	0	0	0
Females	0	0	0

Number of Age Classes: None

Number of Reproductives: None

Number of Recaptures: None

Prairie vole (*Microtus ochrogaster*)

Number Caught:	Oct 14	Oct 15	Oct 16
Males	0	0	0
Females	0	0	0

Number of Age Classes: None

Number of Reproductives: None

Number of Recaptures: None

## **5.0 BIRD SURVEY**

The bird surveys will be conducted on October 28, 29 and November 1, 1993 now that permission has been received to enter the Protected Area with binoculars. For this bird survey period breeding bird species have completed their nesting activities and young have left the nests. Fall migration has commenced and many species, such as Say's Phoebe, have left or are leaving the area to winter elsewhere, while others remain as year-round residents such as the Starling. The bird survey will identify those species presently within the Industrial Area OU.

## 6.0 REFERENCES

- Burt, W.H. and Grossenheider, R.P.. 1964. *A Field Guide to the Mammals*. Houton Mittlin Co. Boston, p. 284.
- Clark, S.V., Wegger, P.J., Komarkova, V., Weber, W.A. 1980. *Map of Mixed Prairie Grassland Vegetation Rocky Flats, Colorado*. Occasional Paper No. 35.
- DOE, 1993. *Industrial Area Environmental Evaluation Field Sampling Plan. Rocky Flats Plant. October 15, 1993*
- EG&G, 1992a. *Standard Operating Procedures Manual, Volume V, Ecology, Manual No. 5-21200-OPS-EE*. Golden, Colorado. EG&G Rocky Flats, Inc. (Currently undergoing review).
- EG&G, 1992b. *Standard Operating Procedures Manual, Volume I, Field Operations, Manual No. 5-2100-OPS-FO*. Golden, Colorado. EG&G Rocky Flats, Inc. (revision 5/12/92).
- Hall, R.E. and N.R. Nelson. 1959. *The Mammals of North America. Volume II*. The Ronald Press Co., p. 1083.
- Robbins, C.S., B. Brun, and H.S. Zim. 1966. *Birds of North America*. Western Publishing Co., Inc., Golden Press, NY, p. 340.

## **FIGURES**

**APPENDIX A**

**HABITAT AND VEGETATION SURVEY**

# FORM 5.10 RELEVÉ SURVEY DATA FORM

Plot (Releve) No. m-x grassland Date 10-14-93

Plot (Releve) Size variable (length by width in meters)

Community Type Mixed mesic/eric grassland - NW drainage

Comments/Phenology mid-fall bloom - seed set

Observers SAB

DAT

Field Notebook No.: IA09 page 2

Common Name & Species Code	*Cover Class
1stco <i>Stipa comata</i>	2, 1
2Gusa <i>Gutierrezia sarothrae</i>	+, +
3Arla <i>Artemisia ludoviciana</i>	+, 3
4Arlo <i>Aristida longiseta</i>	2, +
5Poco <i>Poa compressa</i>	+, 2
6Kola <i>Koeleria pyramidata</i>	1, 1
7Erf <i>Erigeron flagellaris</i>	1, +
8Ange <i>Andropogon gerardii</i>	1, 1
9Ansc <i>Andropogon scoparia</i>	2, 1
10Cael <i>Carex pleiocharis</i>	+, 2
11Bocu <i>Bouteloua curtipendula</i>	+, 1
12Bogr <i>Bouteloua gracilis</i>	1, 1
13Hatr <i>Harbouria frachyleura</i>	+, +
14Popr <i>Poa pratensis</i>	+, +
15Sesp <i>Senecio spartioides</i>	+, +
16Dapa <i>Dalea purpurea</i>	+, +
17Arca <i>Artemisia campestris</i>	+, +
18Aila <i>Achillea lanulosa</i>	+, +
19Mato <i>Muhlenbergia torreyi</i>	+, +
20Arfe ( <i>arenaria fendleri</i> )	+, +
21Raco <i>Ratibida columnifera</i>	+, +
22Almi <i>Alyssum minus</i>	+, +
23Toda <i>Tridax dubius</i>	+, +
24Amps <i>Ambrosia psilostachya</i>	+, +
25Hevi <i>Heterotheca villosa</i>	+, +

5 = >75%      1 = <5%  
 4 = 50-75%      + = few  
 3 = 25-50%      r = solitary  
 2 = 5-25%

Common Name & Species Code	*Cover Class
26Lemo <i>Lesquerella montana</i>	+, +
27Viam <i>Vicia americana</i>	+, -
28Bohi <i>Bouteloua hirsuta</i>	1, 1
29Lipu <i>Liatris punctata</i>	+, +
30Rozc <i>Rosa acicularis</i>	+, 1
31Aspo <i>Aster porteri</i>	+, +
32Artr <i>Artemisia frigida</i>	+, +
33Pate <i>Psoralea tenuiflora</i>	+, +
34Stvi <i>Stipa viridula</i>	+, 1
35Oxli <i>Oxybaphus lincis</i>	+, +
36Symc <i>Symphoricarpos occidentalis</i>	+, +
37Opco <i>Opuntia compressa</i>	+, +
38Hean <i>Helianthus annuus</i>	+, +
39Lase <i>Lactuca serriola</i>	+, +
40Onmo <i>Onosmodium molle</i>	+, +
41Paja <i>Paronichia jamesii</i>	+, +
42Chfu <i>Chrysopsis fulcrata</i>	+, +
43Somi <i>Solidago missouriensis</i>	+, +
44Yagl <i>Yucca glauca</i>	+, +
45Hype <i>Hypericum perforatum</i>	+, +
46Tat <i>Taraxacum officinale</i>	+, +
47Grsg <i>Grindelia squarrosa</i>	+, +
48Cium <i>Cirsium undulatum</i>	+, +
49Arfe <i>Aristida fendleri</i>	+, +
50Sper <i>Sporobolus cryptandrus</i>	+, +

51 Phhe *Phacelia hederifolia* +, -  
 52 Kueu *Kuhnia eupatorioides* +, +  
 53 Phvi *Physalis virginiana* +, +  
 54 Canu *Carduus nutans* +, +  
 55 Stro *Stipa robusta* +, +  
 56 Veth *Verbascum thapsus* +, +  
 57 Pavl *Panicum virgatum* +, +  
 58 Agsm *Agropyron smithii* +, +  
 59 Cmel *Corelina microcarpa* +, +

① 21% slope  
 248 aspect  
 ② 137 asp  
 12% slope  
 1 Ponderosa pi

80 Elca *Elymus canadensis* +, +  
 79 Brte *Bromus tectorum* +, +  
 78 Pogr *Potentilla gracilis* +, +  
 77 Phhe *Phacelia hederifolia* +, +  
 76 Gaar *Gallardia aristata* +, +  
 75 Asdr *Asclepias syriaca* +, +  
 74 Buba *Burchardia umbellata* +, +  
 73 Schy *Scirpus holcioides* +, +  
 67 Lida *Lupinus albus* +, +  
 68 Lida *Lupinus albus* +, +  
 66 Somo *Solidago mollis* +, +  
 70 Seta *Senecio platensis* +, +  
 71 Mamo *Muhlenbergia montana* +, +  
 72 Erfe *Erythronium americanum* +, +  
 69 Hatr *Harbouria frachyleura* +, +  
 68 Japa *Juniperus communis* +, +  
 67 Japa *Juniperus communis* +, +  
 66 Japa *Juniperus communis* +, +  
 65 Japa *Juniperus communis* +, +  
 64 Japa *Juniperus communis* +, +  
 63 Japa *Juniperus communis* +, +  
 62 Japa *Juniperus communis* +, +  
 61 Japa *Juniperus communis* +, +

# FORM 5.10 RELEVE SURVEY DATA FORM

Plot (Releve) No. 16 / main grassland Date 10-11-97

Plot (Releve) Size ✓ (length by width in meters)

Community Type Reclaimed grassland - Maine climatic - NW drainage extension

Comments/Phenology N hillside W of NW drainage

Observers PAT SAB Field Notebook No.: 1A04 - P.2

Common Name & Species Code	*Cover Class
1 Phpr Phleum pratense	+
2 Popr Poa pratensis	1
3 Agin Agropyron intermedium	2
4 Bocy Bouteloua curtipendula	1
5 Ansc Andropogon scoparia	1
6 Hype Hypericum perforatum	+
7 Oebi Oenothera biennis	+
8 Phar P. arundinacea	+
9 Ansc	
10 POCO Poa compressa	+
11 Sper Sporobolus cryptandrus	+
12 Pavl Panicum virgatum	
13 Brin Bromus inermis	
14 Dagl Dactylis glomerata	
15 Agcr Agropyron cristatum	
16 Arth Artemisia ludoviciana	
17 Lasc Lactuca scariola	
18 Juba Juncus balticus	
19 Asp Aster porteri	
20 Trida Tragopogon dubius	
21 Cedi Centaurea diffusa	
22 Oxdl Oxalis dilleniata	
23 Erdi Erigeron divergens	
24 Gcrs Gerardia squarrosa	
25 Besh Belaxum thapsia	

5 = >75% 1 = <5%  
 4 = 50 - 75% + = few  
 3 = 25 - 50% r = solitary  
 2 = 5 - 25%

Common Name & Species Code	*Cover Class
26 Lipu Liatris punctata	
27 Agsm Agropyron smithii	
28 Ange Andropogon gerardii	1
29 Seop Senecio spodioides	
30 Gusa Gutierrezia sarothrae	
31 Arlo Aristida longiseta	
32 Meal Melilotus alba	1
33 Syc Symphoricarpos occidentalis	
34 Acla Achillea lanulosa	
35 Cann Carduus nutans	
36 Ciar Cirsium arvense	1
37 Ascp Asclepias speciosa	
38 Rucr Rumex crispus	
39 Somo Solidago mollis	
40 Cicham Cichorium <del>sp.</del> <sup>sp.</sup>	
41 Viam Vicia americana	
42 Hevi Heterotheca villosa	
43 Coea Conyza canadensis	
44 Elca Elymus canadensis	
45 Viola nuttalliana	
46 Ropy Rorippa palustris	
47 Meof Melilotus officinalis	
48 Hean Helianthus annuus	
49 Fasc Fallopia	
50 Almi Allysium minus	

51 Hatr Harbouria trachyleura  
 52 Pogr Potentilla gracilis  
 53 Taros Taraxacum officinale  
 54 Muto Muhlenbergia torreyi  
 55 Phpr  
 56 Eues  
 57 Arca Artemisia campestris

Rose ac  
 Rose ac  
 1 ponderosa pine  
 1 sp. seedling

65 Geri Geranium richardsonii  
 66 Stco Stipa comata  
 67 Muma Muhlenbergia montana  
 68 Parja Paronychia jamesii  
 69 Som Solidago missouriensis  
 70 Onmo Onosmodium molle  
 71 Sep Senecio platensis  
 72 Pear Peristemon angustifolia  
 73 Lile Linum lewisii  
 74 Bria Broomrape japonica  
 75 Yucca Yucca glauca  
 76 Lida Linaria clausa  
 77 Raco Rorippa columnaris  
 78 Rose Rose  
 79 Peta Peta  
 80 Prun Prunella virginiana  
 81 Daba Dalea purpurea  
 82 Arde Arenaria fendleri  
 83 Chry Chrysoopsis fulcata  
 84 Cast Castilleja integra

## FORM 5.10 RELEVÉ SURVEY DATA FORM

West grassland

Plot (Releve) No. XGDate 10-15-93Plot (Releve) Size various (length by width in meters)Community Type xenic grassland

Comments/Phenology

Observers SA/BDAT

Field Notebook No.:

Common Name & Species Code	*Cover Class
1 Ansc Andropogon scoparia	2, 2, 2
2 Bogr Bouteloua gracilis	2, 2, 1
3 Buda Buchloe dactyloides	+, +, 2
4 <del>Meol</del> Meol melilotus officinalis	+, +, +
5 Poco Poa compressa	2, 2, 3
6 Plla Plantago lanceolata	1, 1, 1
7 Muwr Muhlenbergia wrightii	1, -, 1
8 Aspo Aster porteri	+, +, 1
9 Lase Lactuca scariola	+, 1, 1
10 Amps Ambrosia psilostachya	1, 1, 1
11 Bocu Bouteloua curtipendula	1, 1, +
12 Mumo Muhlenbergia montana	1, +, +
13 Dapu Dalea purpurea	+, -, +
14 Lipa Liatris punctata	1, +, +
15 Spcr Sporobolus cryptandrus	+, -, +
16 Almi Alyssum minus	+, +, -
17 Pste Psoralea tenuiflora	+, -, -
18 Plpa Plantago patagonica	+, +, -
19 Bohi Bouteloua hirsuta	+, 1, +
20 Ange Andropogon gerardii	2, 2, 3
21 Arlo Aristida longiseta	+, -, +
22 Cedi Centaurea diffusa	+, +, +
23 Lemo Lesquerella montana	+, -, -
24 Trdu Tragopogon dubius	+, -, -
25 Arlu Artemisia ludoviciana	1, +, -

5 = &gt;75%

1 = &lt;5%

4 = 50 - 75%

+ = few

3 = 25 - 50%

r = solitary

2 = 5 - 25%

Common Name & Species Code	*Cover Class
26 Arca Artemisia campestris	+, -, -
27 Sihy Sitanion hystrix	+, -, +
28 Asvi <del>Crotopias viridiflorus</del> Green milkweed	+, -, -
29 Stco Stipa comata	+, -, -
30 Coar Co	+, +, +
31 Grsg Grindelia squarrosa	+, +, +
32 Paja Paronychia jamesii	+, -, -
33 Brja Bromus japonicus	+, -, +
34 Cael Carex eleocharis	+, +, -
35 Aasm Agropyron smithii	+, -, -
36 Chfa Chrysopsis fulcrata	+, -, -
37 Somo Solidago mollis	+, -, -
38 Koma Kolesia macrantha	+, -, -
39 Brte Bromus tectorum	+, -, +
40 Arfe Aristida fendleri	+, -, -
41 Vehr Verbena brachychaeta	+, +, +
42 Brin Bromus inermis	+, +, +
43 Erdi Erigeron divergens	+, -, +
44 Canu Carduus nutans	+, -, -
45 Ciar Cirsium arvense	+, +, -
46 Veth Verbascum thapsis	+, -, +
47 Meal Melilotus alba	+, +, +
48 Phvi Virginia grandiflora	-, +, -
49 Feov Festuca ovina	+, 2, 1
50 Dupa Dysodia papposa	-, +, +

51. Hean Helianthus annuus

52. Hype Hyssopus perforatum

53. Erci Erodium cicutarium

54. Sela Scorzonera laciniata

55. Erf1 Erigeron flagellaris

56. Popr Poa pratensis

57. Oebi Oenothera biennis

58. Taof Taraxacum officinalis

59. Baaa Bacc

① 15 blue spruce  
mowed annually  
some surficial soil  
disturbance  
flat slope + aspect

② small Prvi growing  
Blue spruce perimeter  
on west + north

Center-shelter belt  
Guvi 1st row west  
Elan 2nd row  
Pode 3rd row  
Pipo 4th row east  
Deer + rabbit  
herbivory present

60. Ruer ~~Rumex crispus~~ +  
61. Coar ~~Convolvulus arvensis~~ +  
62. Hoja ~~Hordeum jubatum~~ +  
63. Muto ~~Muhlenbergia torreyi~~ +

# FORM 5.10 RELEVÉ SURVEY DATA FORM

1 - Aspect 90°  
Slope 1°  
2 - Aspect 96°  
Slope 3°

Plot (Releve) No. 5m1 Date 8-14-93  
Plot (Releve) Size irregular (length by width in meters)  
Community Type Short Marsh - E drainage  
Comments/Phenology Late dormant  
Observers JAT, SAB Field Notebook No.: IAOU Pg 2

Common Name & Elac	Species Code	*Cover Class
1 <del>Elac</del>	<del>Eleocharis acicularis</del>	3, 1
2 <del>ju to</del>	<del>Juncus torreyi</del>	2, -
3 <del>ph pr</del>	<del>Phleum pratense</del>	1, -
4 <del>ju ef</del>	<del>Juncus effusus</del>	1, -
5 <del>Al pr</del>	<del>Alopecurus pratensis</del>	+, -
6 <del>Pa ca</del>	<del>Panicum capillare</del>	2, -
7 <del>Na of</del>	<del>Nasturtium officinale</del>	+, -
8 <del>di sp</del>	<del>Distichlis spicata</del>	+, -
9 <del>ju ba</del>	<del>Juncus balticus</del>	+, 4
10 <del>ju ar</del>	<del>Juncus articulatus</del>	-, 1
11 <del>Ciar</del>	<del>Cirsium arvense</del>	-, 2
12 <del>Brin</del>	<del>Bromus inermis</del>	-, t
13 <del>Asso</del>	<del>Asclepias speciosa</del>	-, t
14 <del>Popr</del>	<del>Poa pratensis</del>	-, t
15 <del>Agst</del>	<del>Agrostis stolonifera</del>	-, 1
16 <del>Juhu</del>	<del>Juncus huffonia</del>	-, t
17		
18		
19		
20		
21		
22		
23		
24		
25		

Common Name & Species Code	*Cover Class
26	
27	
28	
29	
30	
31	
32	
33	
34	
35	
36	
37	
38	
39	
40	
41	
42	
43	
44	
45	
46	
47	
48	
49	
50	

5 = >75%      1 = <5%  
4 = 50 - 75%      + = few  
3 = 25 - 50%      r = solitary  
2 = 5 - 25%

# FORM 5.10 RELEVÉ SURVEY DATA FORM

Plot (Releve) No. 57m

Date 10-15-43

Plot (Releve) Size N (length by width in meters)

Community Type Shrub marsh / weedy fringe

Comments/Phenology along drainage plain - railroad ditch - good seed set

Observers DAT SAB Field Notebook No.: I, 104, Page 3

Common Name & Species Code	*Cover Class
1 Juef Juncus effusus	2
2 Ru cr Rumex crispus	1
3 Ho ju Hordeum jubatum	2
4 Ju ba Juncus balticus	+
5 Ro pa Rorippa palustris	+
6 La se Lactuca scariola	+
7 Br ja Bromus japonicus	+
8 Ty la Typha latifolia	+
9 Ag st Agrostis stolonifera	+
10 As po Aster porteri	2
11 Co ca Conyza canadensis	1
12 Me al Melilotus alba	+
13 Vi ne Viola nuttalliana	+
14 Qu ac Q. acuminata	+
15 El ae Eleocharis acicularis	1
16 Ta of Taraxacum officinale	1
17 Se sp Senecio spartioides	+
18 Ag te Agrostis fendleri	1
19 Po pr Poa pratensis	2
20 An se Andropogon scoparius	+
21 Pa ca Panicum capillare	2
22 Se gl Setaria glauca	+
23 Am ps Ambrosia psilostachya	+
24 Bu da Buchloe dactyloides	+
25 Pl pa Plantago patagonica	+

Common Name & Species Code	*Cover Class
26 Gr sg Grindelia squamosa	+
27 Ci ar Cirsium arvense	+
28 Ep pa Epilobium paniculatum	+
29 Me ot Melilotus officinalis	+
30 Ve th Verbascum thapsus	+
31 Ro pa Rorippa palustris	+
32 D bi Denotheca biennis	+
33 Fe pr Festuca pratensis	+
34 Ca ne Carex nebrascensis	+
35 Ac la Achillea lanulosa	+
36 Ec ar	+
37 Pl la Plantago lanceolata	+
38 Ci va Cirsium vulgare	+
39 Li da Linaria dalmatica	+
40 Po co Poa compressa	+
41 He an Helianthus annuus	+
42 Po pa Poa palustris	+
43 Ne ca Nepeta cataractaria	+
44 Br te Bromus tectorum	+
45 Po av Polygonum aviculare	+
46 Pe ma Persicaria maculata	+
47	
48	
49	
50	

1° slope  
6

5 = >75%      1 = <5%  
4 = 50-75%    + = few  
3 = 25-50%    r = solitary  
2 = 5-25%

# FORM 5.10 RELEVÉ SURVEY DATA FORM

Upper portion of  
Northwest drainage  
~~coast~~

Plot (Releve) No. SM - TM Date 10-15-93

Plot (Releve) Size irregular (length by width in meters)

Community Type Short marsh / tall marsh

Comments/Phenology \_\_\_\_\_

Observers SAB

DAT

Field Notebook No.: \_\_\_\_\_

Common Name & Species Code	*Cover Class
1 Poco <i>Poa compressa</i>	
2 Aqtr <i>Agropyron trachycalum</i>	
3 Assp <i>Asclepias speciosa</i>	
4 Fepr <i>Festuca pratensis</i>	
5 Juba <i>Juncus balticus</i>	
6 Ciar <i>Cirsium arvense</i>	
7 Neca <i>Nepeta cataracta</i>	
8 Scac <i>Scirpus acutus</i>	
9 Agst <i>Agrostis stolonifera</i>	
10 Ruer <i>Rumex crispus</i>	
11 Juef <i>Juncus effusus</i>	
12 Oebi <i>Oenothera biennis</i>	
13 Hean <i>Helianthus annuus</i>	
14 Eppa <i>Epilobium paniculatum</i>	
15 Tyla <i>Typha latifolia</i>	
16 Scpa <i>Scirpus pallidus</i>	
17 Popa <i>Poa palustris</i>	
18 Cane <i>Canex nebrascensis</i>	
19 Scac <i>Scirpus acutis</i>	
20 Elac <i>Eleocharis acicularis</i>	
21 Mear <i>Mentha arvensis</i>	
22 Agin <i>Agropyron intermedium</i>	
23 Ropa <i>Rorippa palustris</i>	
24 Scra <i>Scirpus validus</i>	
25 Phpr <i>Phleum pratensis</i>	

Common Name & Species Code	*Cover Class
26 Popr <i>Poa pratensis</i>	
27 Veth <i>Verbasum thapsus</i>	
28 Pavi <i>Panicum virgatum</i>	
29 Sesp <i>Senecio spartioides</i>	
30 Meof <i>Melilotus officinale</i>	
31 Mea1 <i>Melilotus alba</i>	
32	
33	
34	
35	
36	
37	
38	
39	
40	
41	
42	
43	
44	
45	
46	
47	
48	
49	
50	

① side banks w/  
Prvi seedlings  
weedy flora similar  
to railroad site  
  
Small inclusions of  
TYLA  
  
Short marsh gradin  
to tall marsh furth  
down drainage  
w/ Saam - fringe  
of short marsh +  
weedy species  
  
Fringed by Saex as  
we get to bottom  
of drainage w/  
Pode seedlings  
  
end of surface draina  
have ponded water  
Tyla + Scra dominate

5 = >75%      1 = <5%  
4 = 50 - 75%      + = few  
3 = 25 - 50%      r = solitary  
2 = 5 - 25%

# FORM 5.10 RELEVÉ SURVEY DATA FORM

Plot (Relevé) No. TM

Date 10-14-93

Plot (Relevé) Size irregular (length by width in meters)

Community Type Tall marsh - NW drainage

Comments/Phenology \_\_\_\_\_

Observers SAB

DIAT

Field Notebook No.: JAOU - page 2

Common Name & Species Code	*Cover Class
1 Tyla <i>Typha latifolia</i>	
2 Eppa <i>Epilobium paniculatum</i>	
3 SAEX <i>Salix exigua</i>	
4 ASSP <i>Asclepias speciosa</i>	
5 Fepr <i>Festuca pratensis</i>	
6 Gllc <i>Glycyrrhiza lepidota</i>	
7 BRIN <i>Bromus inermis</i>	
8 AGST <i>Agrostis stolonifera</i>	
9 CIAR <i>Cirsium arvense</i> (Canada thistle)	
10 AMER (Leadplant) <i>Amaranthus fruticulosus</i>	
11 JUBA <i>Juncus pallidus</i>	
12 Scva <i>Scirpus validus</i>	
13 Alpr <i>Alopecurus pratensis</i>	
14 Popr <i>Poa pratensis</i>	
15 Naof <i>Rasturtium officinale</i>	
16 Hoju <i>Hordeum jubatum</i>	
17 Soar Southistle <i>Sonchus arvensis</i>	
18 Oest Tall primrose <i>Oenothera strigosa</i>	
19 Cyof (Horn Houndstongue) <i>Cynoglossum officinale</i>	
20 Cane <i>Carex nebraskensis</i>	
21 Rucr <i>Rumex crispus</i>	
22	
23	
24	
25	

Common Name & Species Code	*Cover Class
26	
27	
28	
29	
30	
31	
32	
33	
34	
35	
36	
37	
38	
39	
40	
41	
42	
43	
44	
45	
46	
47	
48	
49	
50	

① Spotty & disturbed thru area

inclusions of short marsh in narrow tall marsh stands

5 = >75%      1 = <5%  
 4 = 50 - 75%      + = few  
 3 = 25 - 50%      r = solitary  
 2 = 5 - 25%

# FORM 5.10 RELEVÉ SURVEY DATA FORM

Plot (Releve) No. TM 1 Date 10-14-93  
 Plot (Releve) Size variable (length by width in meters)  
 Community Type Tall Marsh - E drainage  
 Comments/Phenology \_\_\_\_\_

1 - Aspect 26°  
 Slope 10°  
 2 - Aspect 5°  
 Slope 40°

Observers SAB DAT Field Notebook No.: TABU, Page 2

Common Name & Species Code	*Cover Class
1 Ty la <i>Typha latifolia</i>	x, x
2 Po de <i>Populus deltoides</i>	x, -
3 Ph pr <i>Phleum pratense</i>	x, -
4 Sa am <i>Salix amygdaloides</i>	x, -
5 El an <i>Elaeagnus angustifolia</i>	x, -
6 Sa ex <i>Salix exigua</i>	x, -
7 Po pr <i>Poa pratensis</i>	x, +
8 Me ar <i>Mentha arvensis</i>	x, +
9 Ec cr <i>Echinochloa crus-galli</i>	x, +
10 Ru or <i>Rumex crispus</i>	x, +
11 As sp <i>Asclepias speciosa</i>	x, +
12 De bi <i>Desmodium illinoense</i>	x
13 Cl ac <i>Elychianis abicula</i>	x, +
14 Vi na <i>Viola nuttalliana</i>	x, +
15 Fe pr <i>Festuca pratensis</i>	x, +
16 Ag st <i>Agrostis stolonifera</i>	x, +
17 Cl ar <i>Cirsium arvense</i>	- , +
18 Ju ba <i>Juncus balticus</i>	- , +
19	
20	
21	
22	
23	
24	
25	

Common Name & Species Code	*Cover Class
26	
27	
28	
29	
30	
31	
32	
33	
34	
35	
36	
37	
38	
39	
40	
41	
42	
43	
44	
45	
46	
47	
48	
49	
50	

5 = > 75%      1 = < 5%  
 4 = 50 - 75%      + = few  
 3 = 25 - 50%      r = solitary  
 2 = 5 - 25%

# FORM 5.10 RELEVE SURVEY DATA FORM

Plot (Releve) No. TM 1

Date 8-14-93

Plot (Releve) Size Variable (length by width in meters)

Community Type North Pond - Tall Marsh

Comments/Phenology Full - going dormant

Observers SAB DAT

Field Notebook No.: TAO 11 Page 2

Common Name & Species Code		*Cover Class	Common Name & Species Code		*Cover Class
1	Tyla <i>Typha latifolia</i>	x	26		
2	Juef <i>Juncus effusus</i>	x	27		
3	Alpa <i>Alopecurus pratensis</i>	x	28		
4	Juto <i>Juncus torreyi</i>	x	29		
5	Scam <i>Scirpus americana</i>	x	30		
6	Eccr <i>Echinochloa crus-galli</i>	x	31		
7	Poco <i>Poa compressa</i>	x	32		
8	Hoju <i>Hordeum jubatum</i>	x	33		
9	Eppa <i>Epilobium paniculatum</i>	x	34		
10	De <sup>list</sup> <i>Denothera strigosa</i>	x	35		
11	Sam <i>Salix amygdaloides</i>	x	36		
12	Peru <i>Persicaria maculatum</i>	x	37		
13	Juef <i>Juncus</i>	x	38		
14	Rucr <i>Rumex crispus</i>	x	39		
15	Naof <i>Nasturtium officinale</i>	x	40		
16	Pode (seedling) <i>Populus deltoides</i>	x	41		
17	Coca <i>Coryza canadensis</i>	x	42		
18	Elac <i>Eleocharis acicularis</i>	x	43		
19	Bija <i>Bromus japonicus</i>	x	44		
20			45		
21			46		
22			47		
23			48		
24			49		
25			50		

5 = >75%      1 = <5%  
 4 = 50 - 75%      + = few  
 3 = 25 - 50%      r = solitary  
 2 = 5 - 25%

# FORM 5.10 RELEVÉ SURVEY DATA FORM

Plot (Releve) No. DC Date 11-14-93

Plot (Releve) Size variable (length by width in meters)

Community Type deciduous woodland - NW drainage

Comments/Phenology mid-fall

Observers SAB DAI Field Notebook No.: I fall, Page 2

Common Name & Species Code	*Cover Class
1 <u>Pode</u> <u>Populus deltoides</u>	
2 <u>Saam</u> <u>Salix amygdaloides</u>	
3 <u>Saex</u> <u>Salix exigua</u>	
4 <u>Tp</u> <u>Tamarix pentandra</u>	
5 <u>Ela</u> <u>Elaeagnus angustifolia</u>	
6 <u>Prvi</u> <u>Prunus virginiana</u>	
7 <u>DBH</u> - <u>Pode</u>	
8 <u>seedlings to 12"</u>	
9 <u>5 trees</u>	
10	
11 <u>slowing water</u>	
12 <u>good stream</u>	
13 <u>riparian develop</u>	
14 <u>not weedy</u>	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	

Common Name & Species Code	*Cover Class
26 <u>Deciduous woodland</u>	
27	
28 <u>furthest south</u>	
29 <u>Saam</u>	
30 <u>Pode</u>	
31	
32 <u>several seedlings of Pode &amp;</u>	
33 <u>Saam</u>	
34 <u>Saex also present</u>	
35	
36 <u>DBH 13"</u>	
37 <u>28' tall Pode</u>	
38	
39	
40 <u>100 x 35' area</u>	
41 <u>26 Pode</u>	
42 <u>DBH - 4 - 12"</u>	
43 <u>reclaimed grass - BRTA dominant</u>	
44 <u>several young PRVI</u>	
45	
46	
47	
48	
49	
50	

5 = >75% 1 = <5%

4 = 50-75% + = few

3 = 25-50% r = solitary

2 = 5-25%

## FORM 5.10 RELEVÉ SURVEY DATA FORM

1- Slope  $5^{\circ}$ 

DW-1

2- Aspect  $40^{\circ}$ Plot (Relevé) No. 10Date 10-14-93

Plot (Relevé) Size \_\_\_\_\_ (length by width in meters)

Community Type Deciduous woodland - East drainage

Comments/Phenology \_\_\_\_\_

Observers SABDATField Notebook No.: IAOU Page 2

Common Name & Species Code	*Cover Class
1 <u>PODE</u> <u>Populus deltoides</u>	15 stems
2 <u>DBH</u> <u>seedlings from 2-15 inches</u>	
3 <u>small compact stand</u>	
4 <u>50 feet height</u>	
5 <u>60 x 35'</u>	
6	
7	
8	
9 <u>Ribes cereum</u>	
10 <u>Prunus virginiana</u>	
11	
12 <u>understory is reclaimed grassland</u>	
13 <u>w/ Brin as dominant</u>	
14	
15 <u>4 dead snags + downed trees</u>	
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	

Common Name & Species Code	*Cover Class
26 <u>Drainage (SE Area - east drainage)</u>	
27 <u>_____</u>	
28 <u>Cottonwood seedlings + young trees (20-30')</u>	
29 <u>Rumex olives</u>	(15%)
30 <u>narrow band of wet meadow, short marsh (75%)</u>	
31 <u>some patches of tall marsh (10%)</u>	
32	
33 <u>average 8-10 ft wide</u>	
34 <u>800 ft long (east to west)</u>	
35	
36	
37	
38	
39	
40	
41	
42	
43	
44	
45	
46	
47	
48	
49	
50	

5 = >75%      1 = <5%  
 4 = 50-75%    + = few  
 3 = 25-50%    r = solitary  
 2 = 5-25%

# FORM 5.10 RELEVÉ SURVEY DATA FORM

Plot (Relevé) No. 86

Date 10-14-93

Plot (Relevé) Size variable (length by width in meters)

Community Type Reclaimed grassland - NW drainage

Comments/Phenology mid-July

Observers DAT

SAP

Field Notebook No.: JA04 - Page 2

Common Name & Species Code	*Cover Class
1 <u>Ayer</u> <u>Agropyron cristatum</u>	1, 2, +
2 <u>Agin</u> <u>Agropyron intermedium</u>	3, 5, -
3 <u>Popr</u> <u>Poa pratensis</u>	+, 1, +
4 <u>stvi</u> <u>Stipa viridula</u>	2, -, -
5 <u>stro</u> <u>Stipa robusta</u>	1, -, -
6 <u>Trdy</u> <u>Tragopogon dubius</u>	+, +, +
7 <u>Spcr</u> <u>Sporobolus cryptandrus</u>	+, -, +
8 <u>cicv</u> <u>Cirsium arvense</u>	1, +, +
9 <u>Ansc</u> <u>Andropogon scoparium</u>	+, -, +
10 <u>Ostr</u> <u>Oenothera strigosa</u>	+, -, +
11 <u>Rosc</u> <u>Rosa acicularis</u>	2, -, -
12 <u>Syoc</u> <u>Symphoricarpos occidentalis</u>	1, -, +
13 <u>Arlo</u> <u>Aristida longiseta</u>	+, -, -
14 <u>Grsq</u> <u>Grindelia squarrosa</u>	+, +, +
15 <u>Cand</u> <u>Carduus nutans</u>	+, -, -
16 <u>Bocu</u> <u>Bouteloua curtipendula</u>	+, -, +
17 <u>Brin</u> <u>Bromus inermis</u>	+, -, 4
18 <u>Lase</u> <u>Lactuca scariola</u>	+, +, +
19 <u>Veth</u> <u>Verbascum thapsus</u>	+, +, +
20 <u>Dagl</u> <u>Dactylis glomerata</u>	+, -, -
21 <u>Pavi</u> <u>Panicum virgatum</u>	+, -, -
22 <u>Lida</u> <u>Linaria cathartica</u>	+, -, -
23 <u>Almi</u> <u>Alyssum minus</u>	+, +, +
24 <u>Phpr</u> <u>Phleum pratense</u>	-, 1, +
25 <u>Meal</u> <u>Melilotus alba</u>	-, 1, +

5 = >75%      1 = <5%  
 4 = 50 - 75%      + = few  
 3 = 25 - 50%      r = solitary  
 2 = 5 - 25%

Common Name & Species Code	*Cover Class
26 <u>Aups</u> <u>Ambrosia psilostachya</u>	-, 1, +
27 <u>Cadi</u> <u>Centaurea diffusa</u>	-, +, -
28 <u>Hevi</u> <u>Heterotheca villosa</u>	-, +, -
29 <u>lebl</u> <u>Verbascum blattaria</u>	-, +, +
30 <u>Asp</u> <u>Asclepias speciosa</u>	-, r, +
31 <u>Aspo</u> <u>Aster porteri</u>	-, -, +
32 <u>Arfr</u> <u>Artemisia frigida</u>	-, -, +
33 <u>Gile</u> <u>Gluchrituba lepidota</u> (wild licorice)	-, -, 1
34 <u>Meof</u> <u>Melilotus officinalis</u>	-, -, +
35 <u>Agst</u> <u>(red top bent)</u> <u>Cirsium vulgare</u>	-, -, 1
36 <u>Civu</u> <u>(Bull thistle)</u>	-, -, +
37 <u>Aspa</u>	-, -, +
38	
39	
40	
41	
42	
43	
44	
45	
46	
47	
48	
49	
50	

① 29° aspect  
870 slope

② 93°  
22%

1 Pod  
1 ELAN  
1 SAAM  
several SAEX

③ 53° Aspect  
Slope 20

# FORM 5.10 RELEVÉ SURVEY DATA FORM

Plot (Releve) No. R6

Date 10-14-93

Plot (Releve) Size ✓ (length by width in meters)

Community Type Reclaimed (disturbed) grassland complex - North Pond

Comments/Phenolgy late fall

Observers SAB

PAF

Field Notebook No.: I 104, Page 2

Common Name & Species Code	*Cover Class
1 <u>Ag Cr</u> <u>Agropyron cristatum</u>	1
2 <u>Bt in</u> <u>Bromus inermis</u>	2
3 <u>Ag sm</u> <u>Agropyron Smithii</u>	1
4 <u>Ag in</u> <u>Agropyron intermedium</u>	T
5 <u>Me al</u> <u>Melilotus alba</u>	1
6 <u>Me of</u> <u>Melilotus officinale</u>	1
7 <u>Al mi</u> <u>Alyssum minus</u>	T
8 <u>Amps</u> <u>Ambrosia psilostachya</u>	T
9 <u>Lase</u> <u>Lactuca scariola</u>	1
10 <u>Po pr</u> <u>Poa pratensis</u>	T
11 <u>Po co</u> <u>Poa compressa</u>	T
12 <u>Tr du</u> <u>Tragopogon dubius</u>	T
13 <u>He vi</u> <u>Heterotheca villosa</u>	T
14 <u>Sp cr</u> <u>Sporobolus cryptandrus</u>	1
15 <u>Er sg</u> <u>Erigeron squarrosus</u>	T
16 <u>Ar lo</u> <u>Aristida longiseta</u>	T
17 <u>Er fl</u> <u>Erigeron flagellaris</u>	T
18 <u>Ce di</u> <u>Centaurea diffusa</u>	T
19 <u>Ve bl</u> <u>Verbascum blattaria</u>	T
20 <u>He an</u> <u>Helianthus annuus</u>	R
21 <u>As po</u> <u>Aster porteri</u>	T
22 <u>Ph pr</u> <u>Phleum pratense</u>	T
23 <u>Ag tr</u> <u>Agropyron trachypachum</u>	T
24	
25	

Common Name & Species Code	*Cover Class
26	
27	
28	
29	
30	
31	
32	
33	
34	
35	
36	
37	
38	
39	
40	
41	
42	
43	
44	
45	
46	
47	
48	
49	
50	

5 = >75%      1 = <5%  
 4 = 50 - 75%      + = few  
 3 = 25 - 50%      r = solitary  
 2 = 5 - 25%

# FORM 5.10 RELEVÉ SURVEY DATA FORM

Plot (Relevé) No. 1 - Date 10-14-93

Plot (Relevé) Size Irregular (length by width in meters)

Community Type Reclaimed grassland - E drainage

0850

Comments/Phenology Fall dormant

① aspect 299, 6% slope

Observers SAB, DAT

Field Notebook No.: 1A04 Page 2

Common Name & Species Code	*Cover Class	Common Name & Species Code	*Cover Class
1 Ag cr Agropyron cristatum	4+, +, +	26 Vp th Verbascum thapsus	- , - , +
2 fa se Lactuca scariola	2-, +, +	27 Er po Poa compressa	- , - , +
3 Co cr Convolvulus arvensis	1-, +, -	28 Po pr Poa pratensis	- , - , +
4 Gr ag Grindelia squarrosa	2-, +, +	29 Po cr Poa compressa	- , - , +
5 Al mi Alyssum minus	+ , - , -	30 Ar po Aster porteri	- , - , +
6 Br in Bromus inermis	2.5, - , 5	31 Ch fu Chrysopsis fulcrata	- , - , -
7 Am ps Ambrosia psilostachya	+ , - , -	32 Hype Hypericum patulum	- , - , -
8 Bo cr Bouteloua gracilis	1, r, 3, -	33 Er ci Eragrostis ciliaris	- , - , -
9 Bu da Buchloe dactyloides	+ , - , -	34 Sp cr Sporobolus cryptandrus	- , - , -
10 Br ja Bromus japonicus	+ , - , +	35 GLE Wild licorice	- , - , -
11 Tr du Tragopogon dubius	r, - , +	36 Asp Asclepias speciosa	- , - , +
12 Me of Melilotus officinalis	r, +, 1, -	37 Fe pr Festuca pratensis	- , - , -
13 Ag in Agropyron intermedium	+ , +, - , -	38 Canu Carduus nutans	- , - , -
14 Ta of Taraxacum officinale	+ , - , -	39 Ar lo Arisaema longisetum	- , - , -
15 Bo gr Bouteloua gracilis	+ , - , -	40 Ag sm Agropyron smithii	- , - , -
16 Ce di Centaurea diffusa	r, - , -	41 Ag sm Agropyron smithii	- , - , -
17 Ci ar Cirsium arvense	1/2+, +, +	42 Dy pa Dysodia papposa	- , - , -
18 Ag st Agrostis stolonifera	- , +, - , -	43	
19 Cl ar	- , +	44	
20 Ju ba Juncus balticus	- , +, - , -	45	
21 Ps te Psoralea tenuiflora	- , +, - , -	46	
22 Vi am Vicia americana	+ , +, -	47	
23 Me al Melilotus alba	+ , 1, -	48	
24 He vi Heliotropium villosa	- , +, -	49	
25 Li da Linaria dalmatica	- , +, -	50	

② aspect 142 slope 10%  
 ③ aspect 277 slope 20%  
 disturbed weedy/grassland mix  
 ④ aspect 1040 slope 3-50 North-facing slumped  
 ⑤ aspect 1450 slope 5° south-facing completely disturbed

5 = > 75%      1 = < 5%  
 4 = 50 - 75%      + = few  
 3 = 25 - 50%      r = solitary  
 2 = 5 - 25%

**APPENDIX B**

**SMALL MAMMAL SURVEY**

SMALL MAMMAL  
LIVE TRAPPING DATA FORM

EE6A

Site East Drainage EG&G Project No. \_\_\_\_\_  
 Page 1 of 1  
 Date Oct 14 1993 Time: 0938  
 Grid or Line No. LINE # 1 (1-20); #2 (31-40) Grid/Line Size 40 Traps  
 Temperature (°C) 25.0° F Wind Speed < 5 mph Cloud Cover (%) 70%  
 Habitat Type(s) Reclaimed Grassland - 1st 30 traps / Disturbed #31-40  
 Comments Cool night

Observer(s)/Field Notebook No.(s): Joe Marino / Trace Bevert

Trap No.	Species	Marked Y/N	Sex	Age Class	Repro	Wt(g)	(Optional) Length		Other/Moon Phase
							Head & Body	Tail	
1	<del>Per. Man.</del> PEMA1	N/A	M	J Subad	N	9	60	53	
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13	Prairie Vole m10c1	N/A	M	Ad	N	55	120	40	
14									
15									
16									
17									
18									
19									
20									
24	PER MAN PEMA1	N/A	M	J Subad	N	10g	65	67	
38	PENWA1	N/A	M	J Subad	N	11g	65	70	

3JB Completed by: JOE MERINO

Print Name

Signature

10/14/93

Date

Subcontractor: RUST

SMALL MAMMAL  
LIVE TRAPPING DATA FORM

EE6A

Site East Drainage EG&G Project No. \_\_\_\_\_  
 Page 1 of 3  
 Date Oct 18, 1993 Time: 0835  
 Grid or Line No. #1 (1-30) Grid/Line Size 10 traps  
 Temperature (°C) 24.5°F Wind Speed < 5 mph Cloud Cover (%) 60%  
 Habitat Type(s) Reclaimed / Disturbed grassland  
 Comments Frost on traps in drainage.

Observer(s)/Field Notebook No.(s): Joe Merino / ~~Neil S.~~ NEIL S.

Trap No.	Species	Marked Y/N	Sex	Age Class	Repro	Wt(g)	(Optional) Length		Other/Moon Phase
							Head & Body	Tail	
1	Rei Meg RENE1	N	F	SB	N	13	62	62	
2									
3	Mic Orc - <sup>MIOT 1</sup> dead in trap	N	M	A	N	34	96	35	
4	-								
5	-								
6	-								
7	-								
8	-								
9	-								
10	Mic Orc MIOT 1	N	M	A	N	50	97	38	
11	Rei Meg RENE1 J	N	M	J	N	8	56	53	
11	<sup>MIOT 1</sup> Pet Man - 2 in trap	N	M	J	N	8	55	55	
12	-								
13	Mic Orc - <sup>MIOT 1</sup> Recap	N	M	A	N	34	103	32	
14	Pet Man PEMA1	N	M	<sup>MIOT 10-2013</sup> JASB	N	11	68	65	
15	-								

Completed by: JOE MERINO  
 Print Name

Joe Merino  
 Signature

10-15-93  
 Date

Subcontractor: RUST

## SMALL MAMMAL LIVE TRAPPING DATA FORM

EE6A

Site East Drainage EE6A EG&G Project No. \_\_\_\_\_  
 Page 2 of 3  
 Date Oct 15, 1993 Time: \_\_\_\_\_  
 Grid or Line No. #1 (1-30) Grid/Line Size \_\_\_\_\_  
 Temperature (°C) \_\_\_\_\_ Wind Speed \_\_\_\_\_ Cloud Cover (%) \_\_\_\_\_  
 Habitat Type(s) (See Sheet/pe #1)  
 Comments \_\_\_\_\_

Observer(s)/Field Notebook No.(s): 5/6 SPERINO/NEIL S.

[illegible]

Completed by: JOE MERINO Joe Merino 10-15-93  
Print Name Signature Date

Subcontractor: RUST



## EE6A

Observer(s)/Field Notebook No.(s): DE MERIND/WENDY JOHNSON

[illegible]

*Joe Merina*  
Signature

10-16-93

856D0998.003

## EE6A

Page 2 of 3

Date 10-16-93 Time: \_\_\_\_\_

Grid or Line No. Line #1 (1-30) Grid/Line Size 30' x 30'

Temperature (°C)	Wind Speed	Cloud Cover (%)
------------------	------------	-----------------

Habitat Type(s) \_\_\_\_\_

Comments (See p. 1 of 2)

Observer(s)/Field Notebook No(s): JOE MERINO / ~~XXXXXXXXXX~~ WENDY JOHNSON

[illegible]

Completed by: JOE MERINO Joe Merino 10-16-93  
Print Name Signature Date

Subcontractor: \_\_\_\_\_





# SMALL MAMMAL LIVE TRAPPING DATA FORM

EE6A

Site NW Drainage EG&G Project No. \_\_\_\_\_  
 Page 1 of 2  
 Date Oct 18 1993 Time: 0920  
 Grid or Line No. #1 (1-20) Grid/Line Size 20 traps  
 Temperature (°C) \_\_\_\_\_ Wind Speed \_\_\_\_\_ Cloud Cover (%) \_\_\_\_\_  
 Habitat Type(s) \_\_\_\_\_  
 Comments (See pg 2 of 2)

Observer(s)/Field Notebook No.(s): Merino/Neil S.

Trap No.	Species	Marked Y/N	Sex	Age Class	Repro	Wt(g)	(Optional) Length		Other/Moon Phase
							Head & Body	Tail	
1	-								
2	-								
3	-								
4	-								
5	trapped								
6	-								
7	-								
8	-								
9	-								
10	-								
11	-								
12	-								
13	-								
14	Per Man PEMA 1	N	M	JSB	N	11	58	55	
15	Mic Orc MIOC 1	N	F	A	R	43	108	36	
16	-								
17	Mic Orc MIOC 1	N	F	SA	N	28	98	26	
18	-								
19	-								
20	-								

Completed by: JOE MERINO  
Print Name

Joe Merino  
Signature

10-15-93  
Date

Subcontractor: RUST

SMALL MAMMAL  
LIVE TRAPPING DATA FORM

EE6A

Site NW Drainage EG&G Project No. \_\_\_\_\_Page 2 of 2Date Oct 19 1993 Time: 0915Grid or Line No. #2 (21-40) Grid/Line Size 20 trapsTemperature (°C) ± 55°F Wind Speed < 5 mph Cloud Cover (%) 60Habitat Type(s) Reclaimed Grassland / RiparianComments Traps set close to drainageObserver(s)/Field Notebook No.(s): Joe Merino / Neil S

Trap No.	Species	Marked Y/N	Sex	Age Class	Repro	Wt(g)	(Optional) Length		Other/Moon Phase
							Head & Body	Tail	
21	-								
22	-								
23	-								
x 24	Per Man PEMA I	N	M	J	N	8	58	53	
25	-								
x 26	Per Man - dead in trap PEMA I	N	F	A	N	20	73	67	
27	-								
28	-								
29	-								
30	-								
31	-								
32	-								
33	-								
34	-								
35	-								
36	-								
37	-								
38	-								
39	-								
40	-								

Completed by: JOE MERINO

Print Name

Joe Merino

Signature

10-15-93

Date

Subcontractor: RUST

# SMALL MAMMAL LIVE TRAPPING DATA FORM

EE6A

Site NW Drainage

EG&amp;G Project No. \_\_\_\_\_

Page 1 of 2Date 16 OCT 1993Time: 0940Grid or Line No. Line #1 (1-20)Grid/Line Size 20Temperature (°C) 25.0°FWind Speed 2.5 mphCloud Cover (%) 75Habitat Type(s) Superior Disturbed / ReclaimedComments Traps close to drainageObserver(s)/Field Notebook No.(s): Joe Merino / Wendy Johnson

Trap No.	Species	Marked Y/N	Sex	Age Class	Repro	Wt(g)	(Optional) Length		Other/Moon Phase
							Head & Body	Tail	
1	—								
2	—								
3	—								
4	—								
5	Peri meg RENE1	N	F	J <sup>4</sup> SA	N	4	52	42	
6	—								
7	—								
8	—								
9	Mic OTC M10C4	N	F	A	N	37	112	40	
10	—								
11	—								
12	—								
13	—								
14	—								
15	—								
16	—								
17	Mic OTC M10C4	N	M	SA	N	23	88	27	
18	—								
19	—								
20	—								

Completed by: JOE MERINO

Print Name

Signature

10-16-93

Date

Subcontractor: RUST

# SMALL MAMMAL LIVE TRAPPING DATA FORM

EE6A

Site NW Dravago EG&G Project No. \_\_\_\_\_  
 Page 2 of 2  
 Date 16 Oct '93 Time: \_\_\_\_\_  
 Grid or Line No. Line #2 (21-40) Grid/Line Size 20 traps  
 Temperature (°C) \_\_\_\_\_ Wind Speed \_\_\_\_\_ Cloud Cover (%) \_\_\_\_\_  
 Habitat Type(s) \_\_\_\_\_  
 Comments (See Sheet #1) for this date

Observer(s)/Field Notebook No.(s): Joe Merino / Wendy Johnson

Trap No.	Species	Marked Y/N	Sex	Age Class	Repro	Wt(g)	(Optional) Length		Other/ Moon Phase
							Head & Body	Tail	
21	—								
22	—								
23	— bait gone								
24	—								
25	—								
26	—								
27	—								
28	—								
29	—								
30	—								
31	—								
32	— bait gone								
33	—								
34	—								
35	—								
36	—								
37	—								
38	—								
39	—								
40	—								

Completed by: JOE MERINO

Print Name

Signature

18-16-93

Date

Subcontractor: RUST

# SMALL MAMMAL LIVE TRAPPING DATA FORM

EE6A

Site WEST 1A ~~Site~~ AREA EG&G Project No. \_\_\_\_\_Page 1 of 1Date Oct 14, 1993 Time: 8:57 AMGrid or Line No. #1 (1-10) #2 (11-20) Grid/Line Size 20 trapsTemperature (°C) ~ 55°F Wind Speed 5 mph Cloud Cover (%) 25Habitat Type(s) XERIC GRASSLANDComments No traps tripped but #3. All bait in trapsNo captures, line #1 (1-10); line #2 (11-20)Observer(s)/Field Notebook No.(s): JOE MERINO / BRUCE BEVIRT

Trap No.	Species	Marked Y / N	Sex	Age Class	Repro	Wt(g)	(Optional) Length		Other/ Moon Phase
							Head & Body	Tail	
1	—								
2	—								
3	— tripped								
4	—								
5	—								
6	—								
7	—								
8	—								
9	—								
10	—								
11	—								
12	—								
13	—								
14	—								
15	—								
16	—								
17	—								
18	—								
19	—								
20	—								

Completed by: JOE MERINO

Print Name

Signature

10-14-93

Date

Subcontractor: RUST

# SMALL MAMMAL LIVE TRAPPING DATA FORM

EE6A

Site WEST AREA EG&G Project No. \_\_\_\_\_  
 Page 2 of 2  
 Date Oct 15, 1993 Time: 10:20 AM  
 Grid or Line No. #1 (1-10) #2 (11-20) Grid/Line Size \_\_\_\_\_  
 Temperature (°C) 0 60°F Wind Speed 5 mph Cloud Cover (%) 60  
 Habitat Type(s) HEMIC GRASSLAND  
 Comments \_\_\_\_\_

Observer(s)/Field Notebook No.(s): JOE MERINO

Trap No.	Species	Marked Y/N	Sex	Age Class	Repro	Wt(g)	(Optional) Length		Other/Moon Phase
							Head & Body	Tail	
1	—								
2	—								
3	—								
4	—								
5	—								
6	—								
7	—								
8	—								
9	—								
10	—								
11	Per man PEMAL	N	F	SA	N	13	60	<del>BROKEN</del> OFF	
12	Per man PEMAL	N	M	SA	N	17	70	55	
13	—								
14	—								
15	—								
16	—								
17	—								
18	—								
19	—								
20	—								

Completed by: JOE MERINO  
 Print Name

Joe Merino  
 Signature

10-15-93  
 Date

Subcontractor: RUST

SMALL MAMMAL  
LIVE TRAPPING DATA FORM

EE6A

Site West Area EG&G Project No. \_\_\_\_\_  
Page 1 of 1  
Date 16 Oct '93 Time: 7:30 AM  
Grid or Line No. #1 (1-10) #2 (11-20) Grid/Line Size \_\_\_\_\_  
Temperature (°C) 55°F Wind Speed 5-10 mph Cloud Cover (%) 65  
Habitat Type(s) KEPIC GRASSLAND  
Comments Cool ? BREEZY

Observer(s)/Field Notebook No.(s): JOE MERINO / WENDY JOHNSON

Trap No.	Species	Marked Y/N	Sex	Age Class	Repro	Wt(g)	(Optional) Length		Other/Moon Phase
							Head & Body	Tail	
1	—								
2	—								
3	—								
4	—								
5	—								
6	—								
7	—								
8	—								
9	—								
10	—								
11	—								
12	—								
13	—								
14	—								
15	—								
16	—								
17	—								
18	—								
19	—								
20	—								

Completed by: JOE MERINO  
Print Name

Signature

16-16-93  
DateSubcontractor: RUST

SMALL MAMMAL  
LIVE TRAPPING DATA FORM

EE6A

Site West South RR Tracks EG&G Project No. \_\_\_\_\_Page 1 of 1Date Oct 14 1993 Time: 0840Grid or Line No. #1 (1-20) Grid/Line Size 20 trapsTemperature (°C) 40-45°F Wind Speed < 5 mph Cloud Cover (%) 60Habitat Type(s) DISTURBED/RECLAIMED. w/ SHORT MARSITComments No traps trapped - No bait taken Closed off trapsObserver(s)/Field Notebook No.(s): JOE MERINO/ BRUCE BEVART

Trap No.	Species	Marked Y / N	Sex	Age Class	Repro	Wt(g)	(Optional) Length		Other/ Moon Phase
							Head & Body	Tail	
1	—								
2	—								
3	—								
4	—								
5	—								
6	—								
7	—								
8	—								
9	—								
10	—								
11	—								
12	—								
13	—								
14	—								
15	—								
16	—								
17	—								
18	—								
19	—								
20	—								

Completed by: JOE MERINO Joe Merino 10-13-93  
Print Name Signature DateSubcontractor: RUST

# SMALL MAMMAL LIVE TRAPPING DATA FORM

Site WRST RR Tracks EE6A \_\_\_\_\_ EG&G Project No. \_\_\_\_\_  
 Page 1 of 1  
 Date Oct 18, 1993 Time: 10:05 AM  
 Grid or Line No. #1 Grid/Line Size 20 traps  
 Temperature (°C) ~ 60°F Wind Speed < 5 mph Cloud Cover (%) 60  
 Habitat Type(s) RECLAIMED GRASSLAND w/ SHORT MARSH  
 Comments \_\_\_\_\_

Observer(s)/Field Notebook No.(s): JMERINO

Trap No.	Species	Marked Y / N	Sex	Age Class	Repro	Wt(g)	(Optional) Length		Other/ Moon Phase
							Head & Body	Tail	
1	-								
2	-								
3	-								
4	-								
5	-								
6	-								
7	-								
8	-								
9	-								
10	-								
11	✓								
12	-								
13	✓								
14	-								
15	✓								
16	-								
17	-								
18	-								
19	-								
20	✓								

Completed by: JOE MERINO

Print Name

Signature

10-16-93

Date

Subcontractor: RUST

# SMALL MAMMAL LIVE TRAPPING DATA FORM

EE6A

Site West RR Tracks

EG&amp;G Project No. \_\_\_\_\_

Page 1 of 1Date 16-Oct 93Time: 1045Grid or Line No. #1 (1-20)

Grid/Line Size \_\_\_\_\_

Temperature (°C) ± 45°FWind Speed ~ 5 mphCloud Cover (%) 10%Habitat Type(s) RECLAIMED GRASSLAND w/ SHORT MARSH

Comments \_\_\_\_\_

Observer(s)/Field Notebook No.(s): JOE MERINO / WENDY JOHNSON

Trap No.	Species	Marked Y / N	Sex	Age Class	Repro	Wt(g)	(Optional) Length		Other/ Moon Phase
							Head & Body	Tail	
1	—								
2	—								
3	—								
4	—								
5	—								
6	—								
7	—								
8	—								
9	—								
10	—								
11	—								
12	Peromyscus REME 1	N	F	J	N	7	62	61	
13	—								
14	—								
15	—								
16	—								
17	—								
18	—								
19	—								
20	—								

Completed by: JOE MERINO

Print Name

Signature

10-16-93

Date

Subcontractor: BUST





LIVE TRAPPING DATA FORM

Site Ponds AND SEEP ~~BEAR CREEK~~ EE6A \_\_\_\_\_ EG&G Project No. \_\_\_\_\_

Page 1 of 1

Date Oct 15 1993 Time: 0910

Grid or Line No. #1 (1-10) Grid/Line Size 10 traps

Temperature (°C) 50°F Wind Speed 4.5 mph Cloud Cover (%) 70

Habitat Type(s) RECLAIMED GRASSLAND w/ TALL & SHORT MARSH

Comments \_\_\_\_\_

Observer(s)/Field Notebook No.(s): JOE MERINO / NEIL S

[illegible]

Completed by: JOE MERINO  
Print Name

Signature \_\_\_\_\_

10-15-93

Subcontractor: KDS

REVISION NO: 1

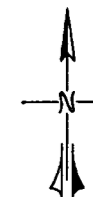
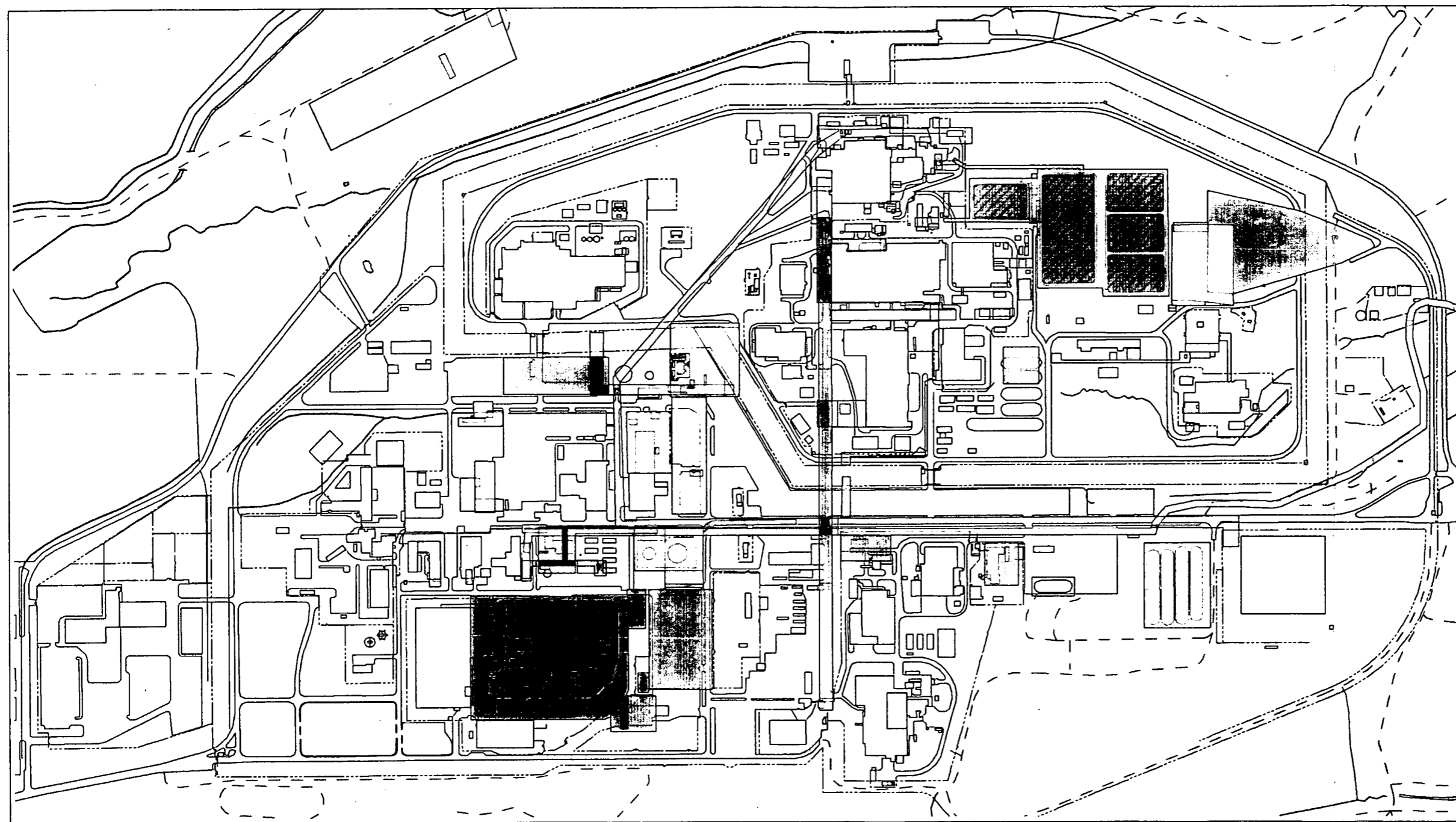
FILENAME: mb91hss.dml

DATE: October 14, 1993

DRAWN BY: K. Stephens

APPROVED BY: *JS*

CHECKED BY: *WJ*



- Drainage
- ▨ Pond
- ▤ Buildings
- Fence
- Paved Road
- - - Dirt Road
- OU8
- OU9
- OU10
- ▨ OU12
- OU13
- OU14
- OU4
- OU6

250 0 250 500 FEET

PREPARED FOR  
U.S. DEPARTMENT OF ENERGY  
ROCKY FLATS PLANT  
GOLDEN, COLORADO

FIGURE 1  
INDUSTRIAL AREA  
ENVIRONMENTAL EVALUATION  
INDIVIDUAL HAZARDOUS  
SUBSTANCE SITES

REVISION NO: 2

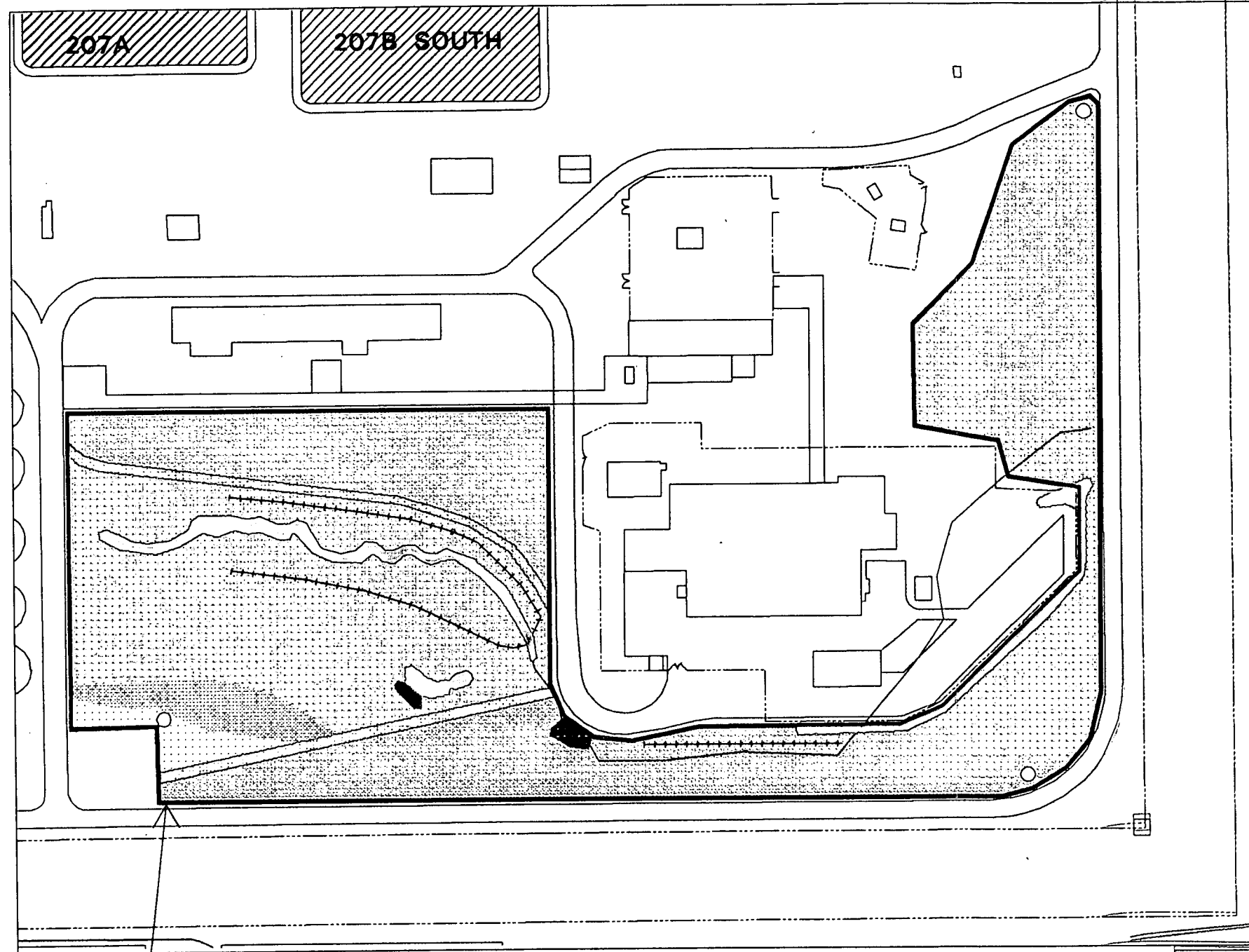
FILENAME: mbcont2.dml

DATE: October 27, 1993

DRAWN BY: K. Stephens

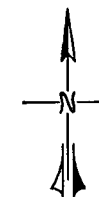
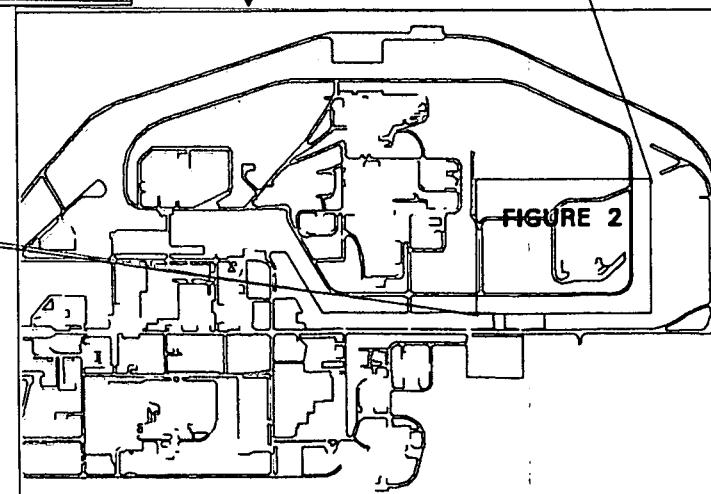
APPROVED BY: *UEF*

CHECKED BY: *UEF*



Outline of Study Area

Location Map



- Drainage
- ▨ Pond
- Buildings
- Fence
- Paved Road
- ▨ Sidewalk
- Rock
- ▨ Reclaimed Grassland
- Short Marsh
- Tall Marsh
- ▨ Disturbed
- ▨ Bare Ground
- Deciduous Woodland
- ▨ Disturbed/Reclaimed
- Outline of Study Area
- ++ Small Mammal Trap Lines
- Bird Observation Points

Scale: 1 Inch = 150 feet

PREPARED FOR  
U.S. DEPARTMENT OF ENERGY  
ROCKY FLATS PLANT  
GOLDEN, COLORADO

FIGURE 2  
INDUSTRIAL AREA  
ENVIRONMENTAL EVALUATION  
EAST DRAINAGE

REVISION NO: 2

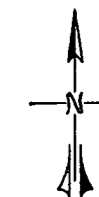
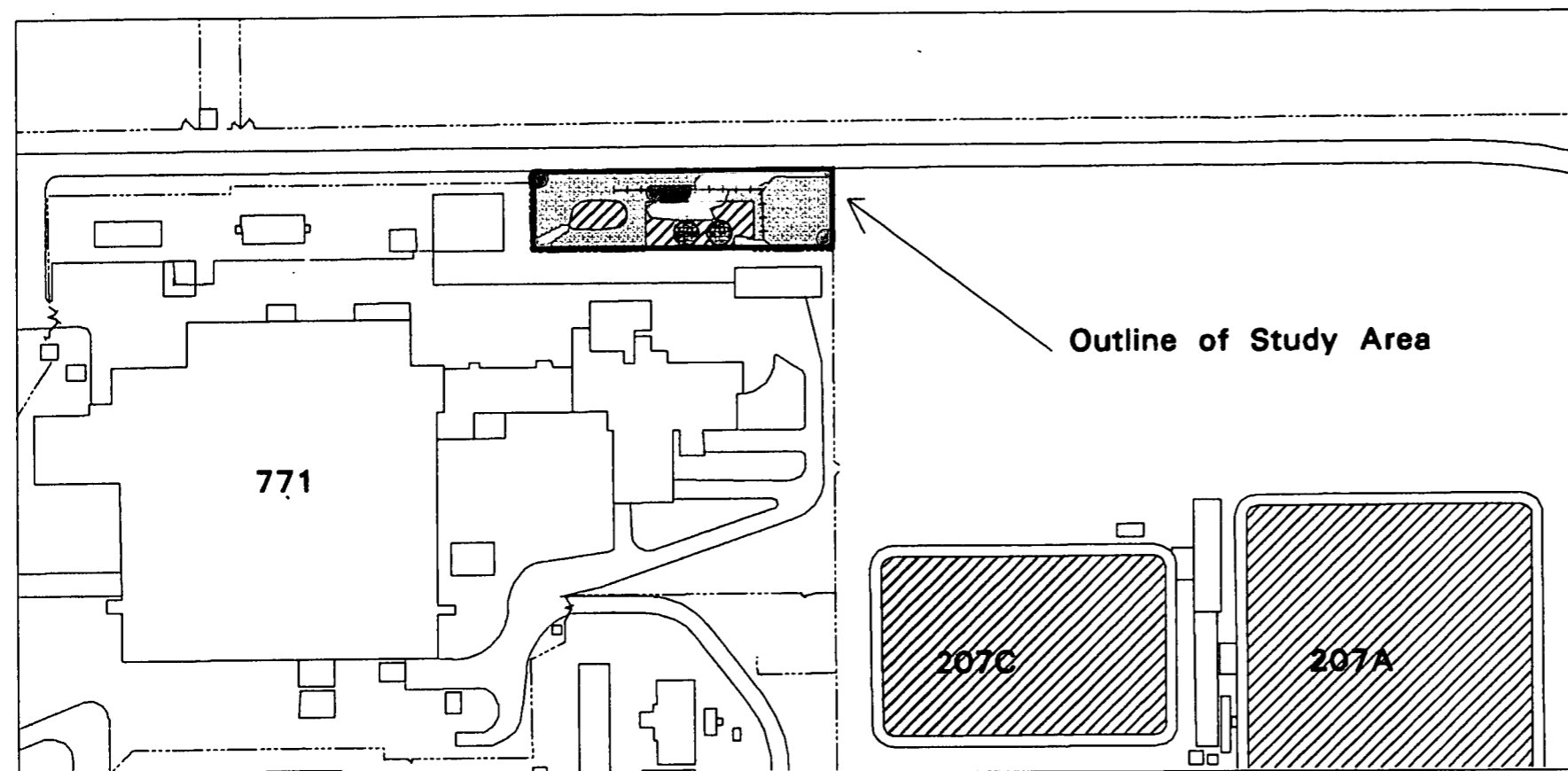
FILENAME: mbconf3.dml

DATE: October 27, 1993

DRAWN BY: K. Stephens

APPROVED BY: VEF

CHECKED BY: WJ



- Drainage
- ▨ Pond
- Buildings
- Fence
- Paved Road

- ▨ Tank
- ▨ Short Marsh
- Tall Marsh
- ▨ Disturbed/Reclaimed

- Outline of Study Area
- ++ Small Mammal Trap Lines
- Bird Observation Points

Scale: 1 Inch = 150 feet

PREPARED FOR  
U.S. DEPARTMENT OF ENERGY  
ROCKY FLATS PLANT  
GOLDEN, COLORADO

FIGURE 3  
INDUSTRIAL AREA  
ENVIRONMENTAL EVALUATION  
NORTH POND AND SEEP

REVISION NO: 2

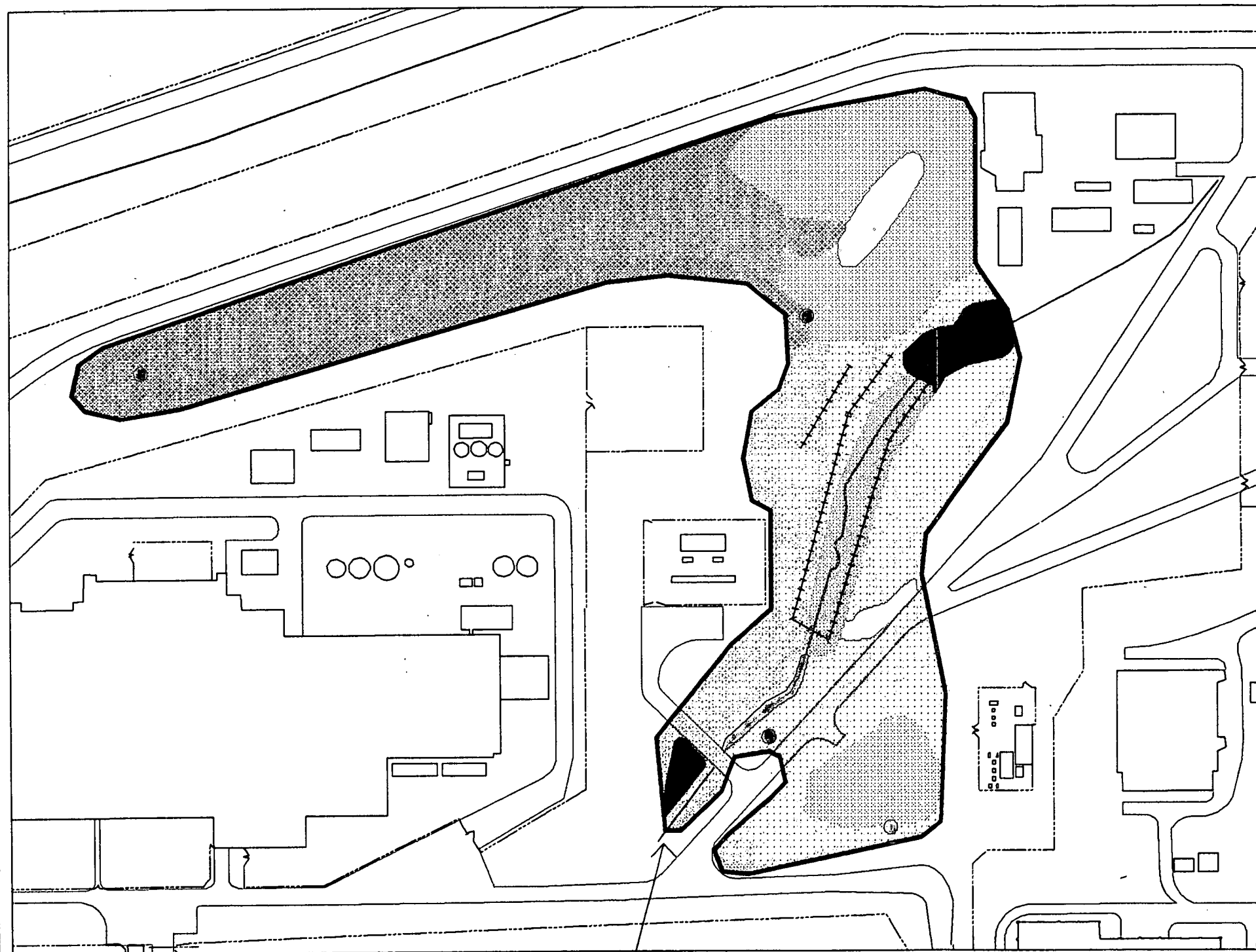
FILENAME: mbconf4.cml

DATE: October 27, 1993

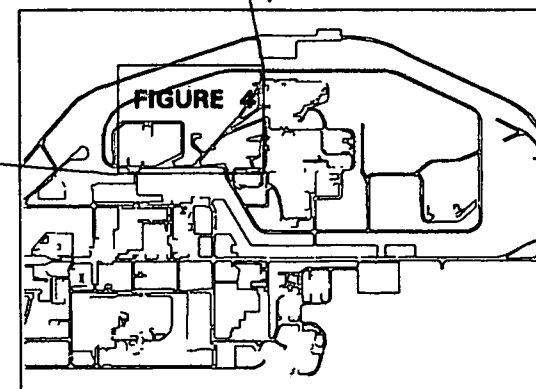
DRAWN BY: K. Stephens

APPROVED BY: JEF

CHECKED BY: [Signature]



Outline of Study Area



- Drainage
- Buildings
- Fence
- Paved Road
- Disturbed
- Bare
- Reclaimed Grassland
- Reclaimed/Disturbed
- Reclaimed/Mesic Grass.
- Mesic Grassland
- Short Marsh
- Tall Marsh
- Deciduous Woodland
- Riparian Shrub
- Xeric/Mesic Grass.

- Outline of Study Area
- Small Mammal Trap Lines
- Bird Observation Points

Scale: 1 inch = 150 feet

PREPARED FOR  
U.S. DEPARTMENT OF ENERGY  
ROCKY FLATS PLANT  
GOLDEN, COLORADO

FIGURE 4  
INDUSTRIAL AREA  
ENVIRONMENTAL EVALUATION  
NORTHWEST DRAINAGE

REVISION NO. 2

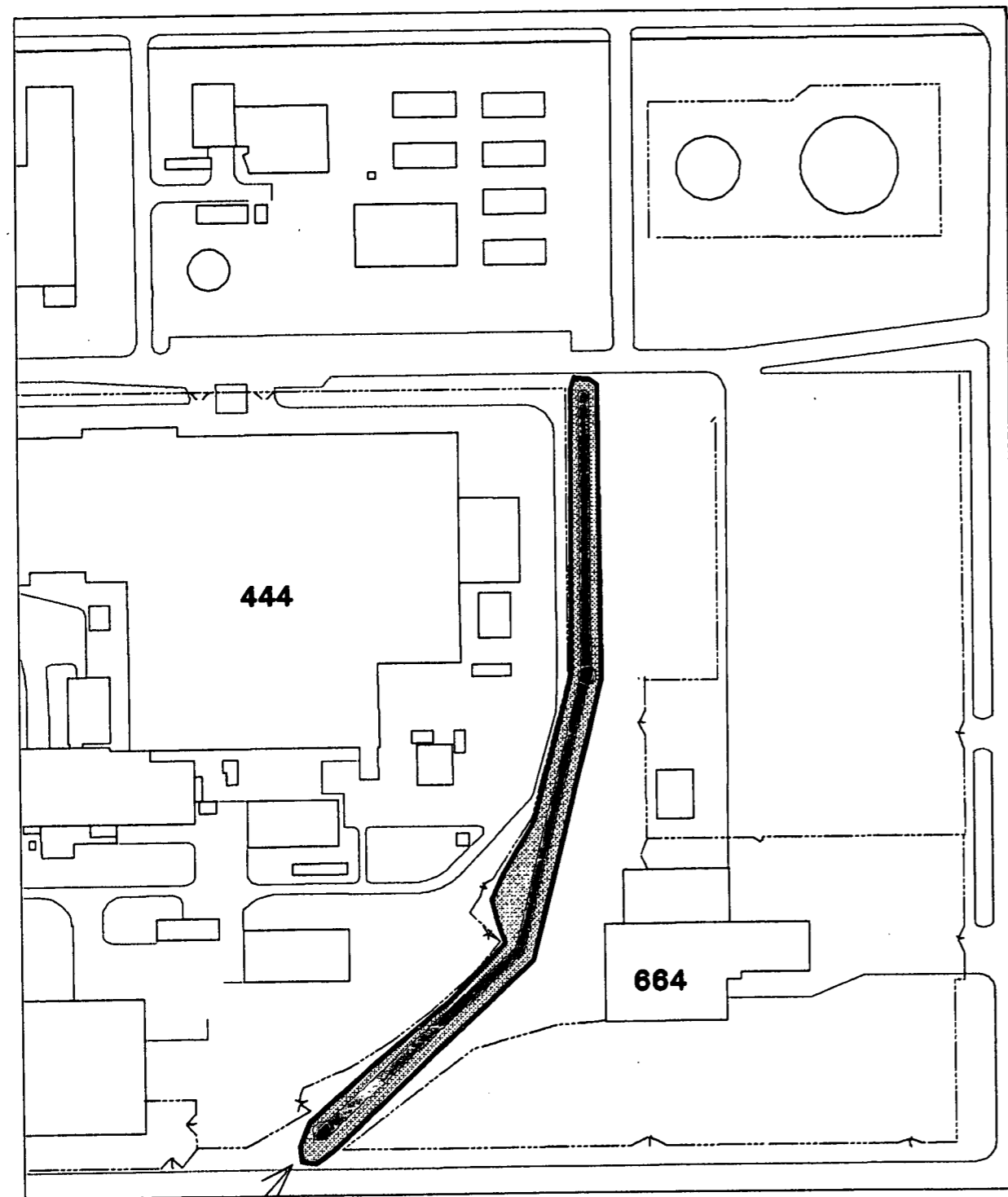
FILENAME: mbconf5.dml

DATE: October 27, 1993

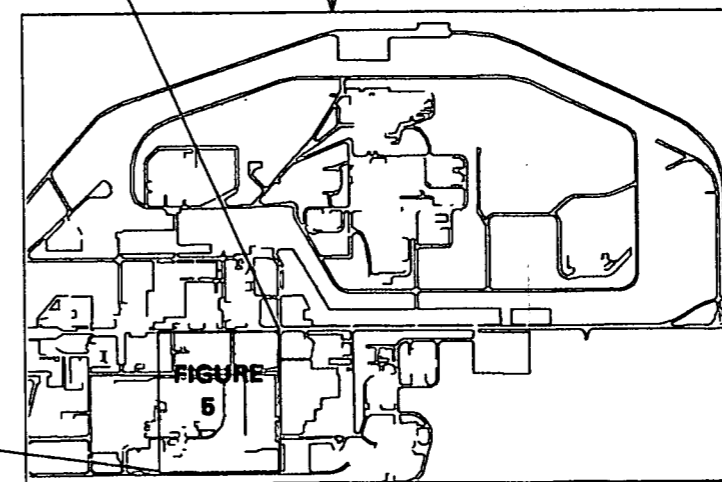
DRAWN BY: K. Stephens

APPROVED BY: *JEF*

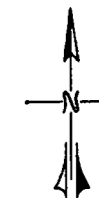
CHECKED BY: *412*



Outline of Study Area



Location Map



- Drainage
- Buildings
- Fence
- Paved Road

- Short Marsh
- Disturbed

- Outline of Study Area
- ++ Small Mammal Trap Lines
- Bird Observation Points

Scale: 1 Inch = 150 feet

PREPARED FOR  
U.S. DEPARTMENT OF ENERGY  
ROCKY FLATS PLANT  
GOLDEN, COLORADO

FIGURE 5  
INDUSTRIAL AREA  
ENVIRONMENTAL EVALUATION  
WEST RAILROAD

REVISION NO: 2

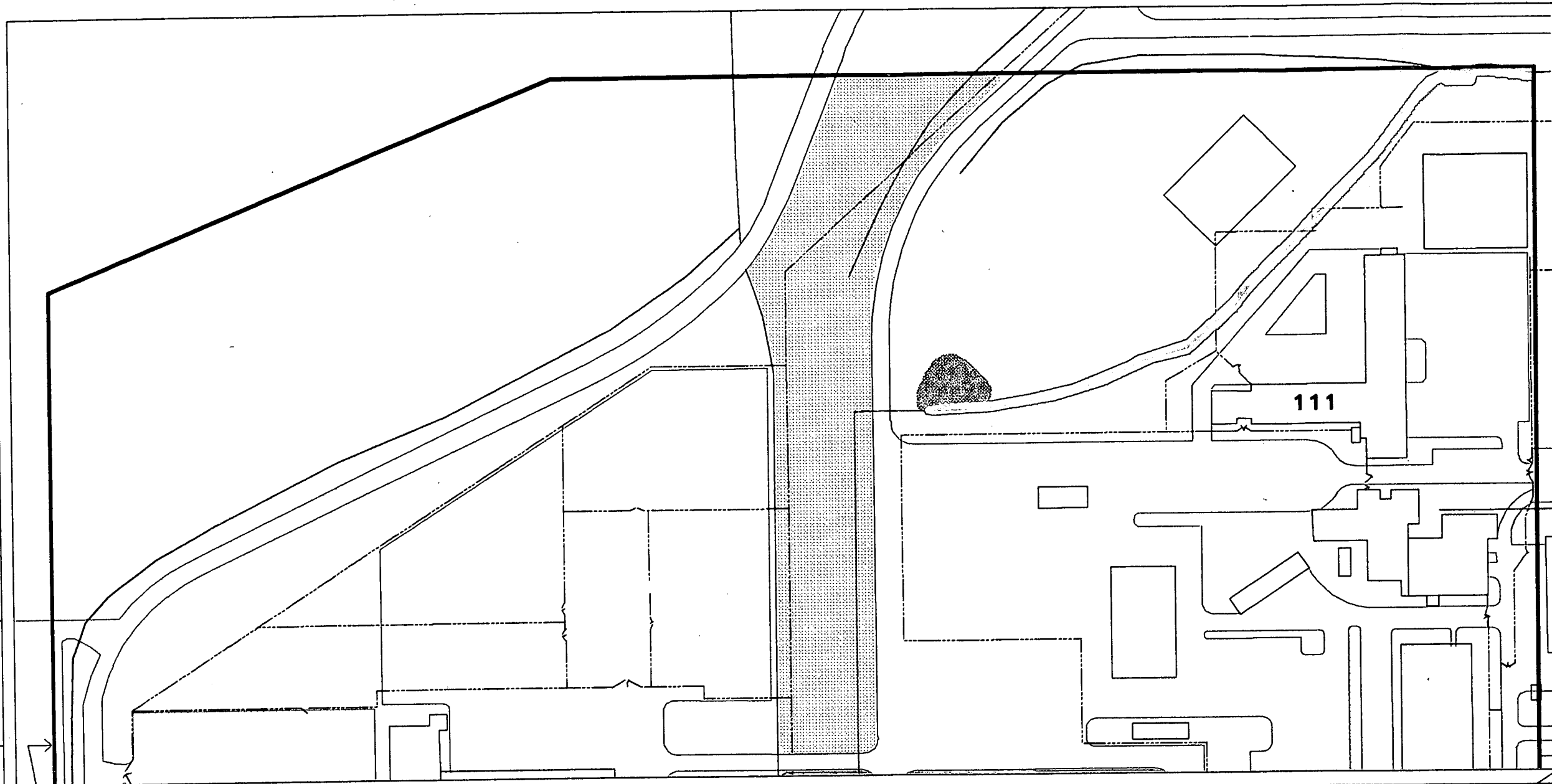
FILENAME: mbconf6a.cml

DATE: October 27, 1993

DRAWN BY: K. Stephens

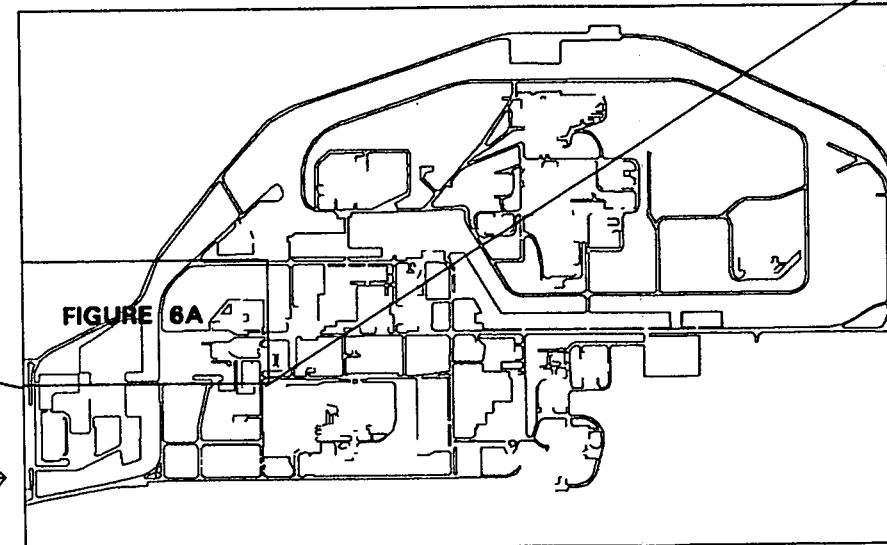
APPROVED BY: *JSF*

CHECKED BY: *Wg*



Outline of Study Area

Location Map



— Drainage  
□ Buildings  
— Fence  
— Paved Road

■ Ornamental Trees  
■ Disturbed/Mesic Grass.  
□ Short Marsh  
□ Tall Marsh

— Outline of Study Area

Scale: 1 inch = 150 feet

PREPARED FOR  
U.S. DEPARTMENT OF ENERGY  
ROCKY FLATS PLANT  
GOLDEN, COLORADO

FIGURE 8A  
INDUSTRIAL AREA  
ENVIRONMENTAL EVALUATION  
WEST AREA

REVISION NO: 1

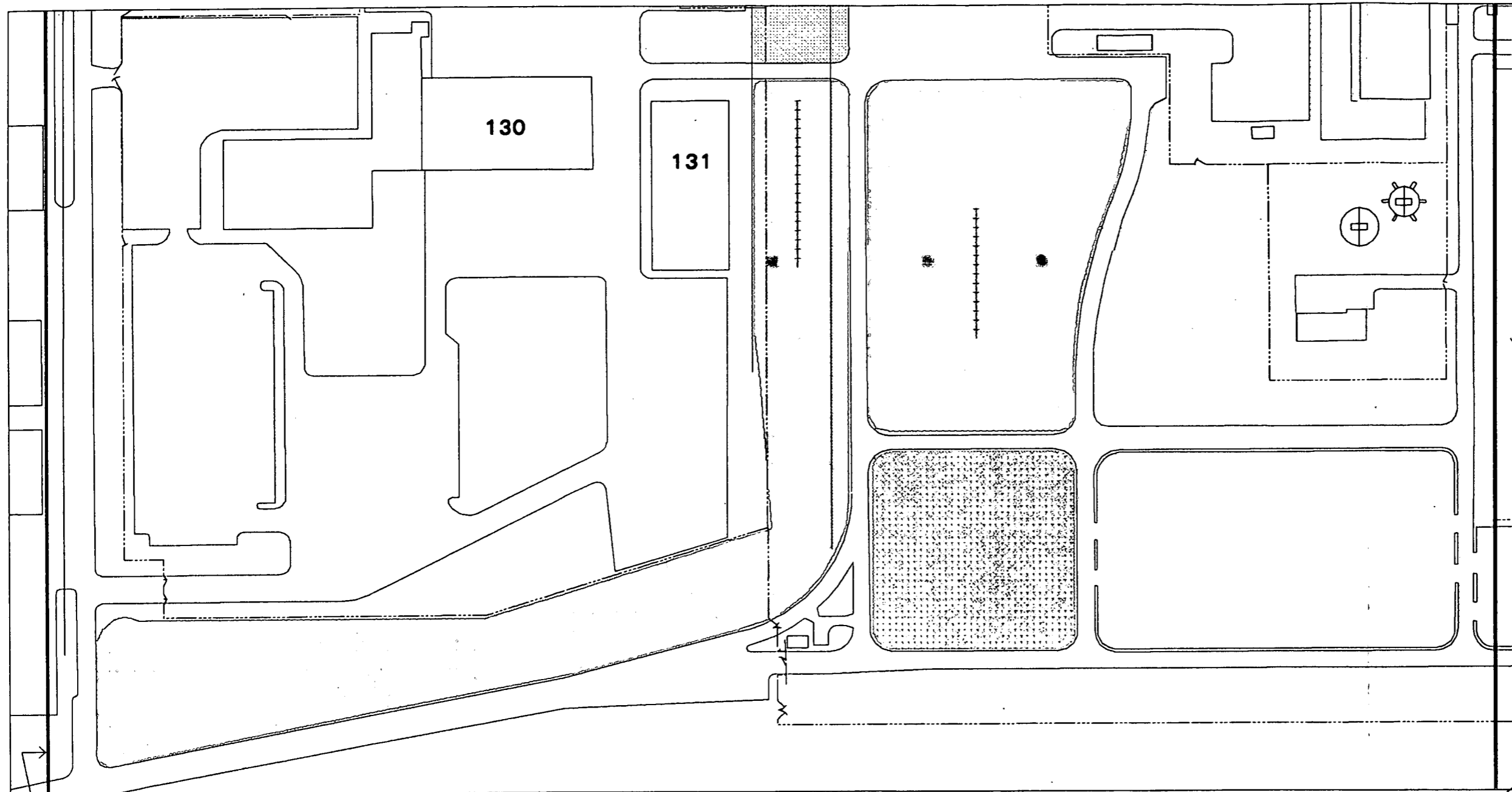
FILENAME: mbcconf6b.dml

DATE: October 27, 1993

DRAWN BY: K. Stephens

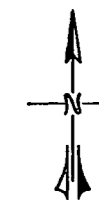
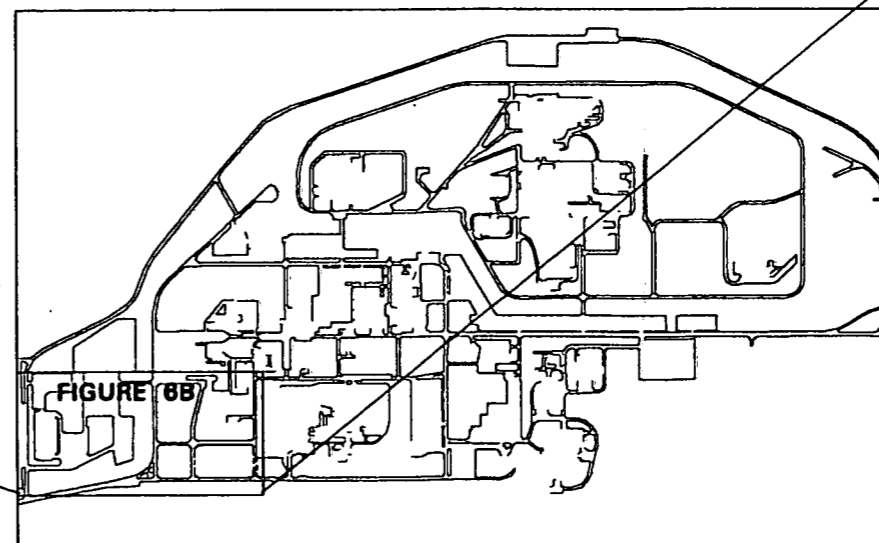
APPROVED BY: JEF

CHECKED BY: WJ



Outline of Study Area

Location Map



- Drainage
- Buildings
- Fence
- Paved Road

- Xeric Grassland
- Xeric/Mesic Grass.
- Disturbed/Mesic Grass.

— Outline of Study Area

— Small Mammal Trap Lines

○ Bird Observation Points

Scale: 1 inch = 300 feet

PREPARED FOR  
U.S. DEPARTMENT OF ENERGY  
ROCKY FLATS PLANT  
GOLDEN, COLORADO

FIGURE 88  
INDUSTRIAL AREA  
ENVIRONMENTAL EVALUATION  
WEST AREA